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Merchandising Section

IN TWO PARTS PART ONE

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office

The business newspaper of the refrigeration industry

VOL. 7, NO. 1, SERIAL NO. 181
ISSUED EVERY WEEK

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DETROIT, MICHIGAN, SEPTEMBER 7, 1932

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CARRIER TO USE DISTRIBUTORS IN NEW SALES PLAN

Distributors, Dealers To Be Appointed By Company

NEWARK—A single selling organization, including dealers and distributors, will be set up to handle all Carrier products by Jan. 1, 1933, according to J. I. Lyle, president of Carrier Corp., who has just outlined plans for the unification of the various domestic sales divisions, formerly known as the Carrier Engineering Corp., general and industrial air conditioning; Brunswick-Kroeschell Co., commercial refrigeration; Carrier-York Corp., industrial and unit heating; and Carrier-Lyle Corp., residential and commercial air conditioning.

One of the first moves in this direction will be the appointment of dealers to handle a new line of small commercial refrigeration units for meat markets, delicatessen stores, groceries, milk and dairy products and restaurants, which have been recently developed and put into production.

Several types of portable, semi-portable and permanently attached cooling and air-conditioning units, for individual rooms or suites, will also be made available to qualified merchandisers for use with Carrier refrigeration equipment.

Certain products will be distributed through dealers and contractors if their application lends itself particularly to this method, and if the equipment is sufficiently standardized to permit distribution in this way.

While plans for the merchandising of such products are being developed, the larger central-station type of air-conditioning systems for office buildings, theaters, department stores and public buildings which involve special application engineering, will be handled direct

(Concluded on Page 2, Column 2)

FRIGIDAIRE PROGRAM OUTLINED IN CHICAGO

CHICAGO—The story of Frigidaire's fall program (see page 1, ELECTRIC REFRIGERATION NEWS, Aug. 31) was told to more than 700 dealers and salesmen in the Chicago district by J. J. Nance, head of the company's sales planning division, at a double-header meeting held here last week.

In the morning dealers and salesmen in the metropolitan area heard Mr. Nance present the factory program, which he said was designed with three points in view—to strengthen Frigidaire leadership, to get immediate business, and to improve the position of all the company's dealers and salesmen.

Harry Wines, general sales manager, presided at the meeting. The introductory talk, opening the session, was made by Lowell McCutcheon, recently appointed general manager of the Chicago district.

Other speakers were S. H. (Two-Gun) Huebner, commercial sales manager; Norman LeVally, district household sales manager, and W. H. Wade, district promotional manager.

In the afternoon the same general program was repeated for more than 50 provincial dealers who were summoned to this city for an exposition of Frigidaire's plans for the remainder of 1932.

McCutcheon Appoints:

CHICAGO—Lowell McCutcheon, recently appointed general manager of the newly formed Frigidaire Sales Corp. of this city, has made the following appointments:

N. W. LeVally, former district manager of the west side of Chicago, is now acting in the capacity of retail sales manager. H. C. Huebner, formerly north side district manager, has been appointed retail commercial sales manager.

The following men have been made supervisors in charge of showrooms: L. J. Donovan, north side showroom, Chicago; W. D. Roeper, Evanston, Ill., showroom; C. O. Pemberton, west side showroom, Chicago; I. J. Kristufek, 79th St. showroom, Chicago; and I. E. Terry, 68th St. showroom, Chicago.

A Message To Dealers

ELECTRIC refrigeration is a good business. Hundreds of you gentlemen who are now reading this front-page editorial have made money selling electric refrigerators during the last few years. A rising tide of public acceptance for this means of adequate food preservation has helped enable you to maintain your positions and forge ahead in the communities which harbor your business, despite a general depression which has laid low most of your neighbors.

Not only have you made money and kept your organizations from disintegrating because of your connection with the electric refrigeration industry, but you have enhanced your local reputations for being honest and square-dealing merchants—for the electric refrigerators you have installed in American homes during the last three or four years have given value received and rendered highly satisfactory service. Customers now look upon you with gratitude and confidence.

By the same token, electric refrigeration can ruin your business and blast your reputation. For today, unfortunately, all those who buy electric refrigerators are not going to be satisfied. Having trusted implicitly in the well-established idea that electric refrigerators are now highly perfected mechanisms, some of them have bought shoddy, under-priced merchandise blindly.

And should you fall for the same fallacious idea—that an electric refrigerator is an electric refrigerator, no matter of what it is made or who manufactured it, there may come a time when you, too, may cry out that you have been gypped.

If, at this time last year, you had asked us what electric refrigerator you should buy, we might have answered: "Buy almost any brand, and bless you; for you will get your money's worth." We can't say that today.

We have seen too many cheap refrigerators on test—machines which run 90 per cent of the time in a 90-degree room; underpowered units which take an intolerably long time to freeze ice; poorly insulated boxes which place an impossible handicap on even a good unit; junky parts which have been substituted for vital links in the refrigeration system; inexpertly assembled refrigerators which have been just "slung together"—to tell a prospective purchaser he can trust any or every electric refrigerator.

Under 1932's price pressure, a number of poorly constructed electric refrigerators have been made and sold in the last few months. Opportunist manufacturers have been ready to market whatever the public demands. They own to no public responsibility; they can cut corners because they have no name to maintain, because they have not set aside reserves to make good on unsatisfactory jobs, and because they expect to remain in the industry only so long as the pickings are good.

In their anxiety to obtain merchandise which might move easily in these times of hard selling, many misguided dealers have stocked and moved refrigerators which will not give good service. They have defrauded the public. And the public, like the elephant, remembers.

Dealers who are anxious to maintain their standing in their community, who want to go back to customers with more goods to sell, who want to be in on the cultivation of markets with such bright futures as those for air conditioning and all-electric kitchens—to say nothing of products now in laboratory cocoons—should think twice before they stock some electric refrigerator of unknown quality.

How can one distinguish between what is good and bad in electric refrigeration? First of all, find out about the company behind the product. Is it planning to stay in the electric refrigeration business? Does it have adequate reserves? Does its name signify quality? Then the refrigerator. Is it well and favorably known to the trade? Is it manufactured from tested and approved parts and materials? Has this unit been tested and okayed by a recognized independent body?

It's a cinch that an electric refrigerator is not to be trusted if the manufacturer has not made his name well known, if he is not using quality parts and materials, if he has been unwilling to offer his product for inspection and say:

"I believe that this is a good refrigerator; and I believe it so firmly that I am putting my name on it, telling the world about it, and risking my money and my reputation that it will give good service over a period of years. It's all mine, and I'm proud of it."

If you've never heard of it, don't buy it.

GEORGE F. TAUBENECK, Editor.

Norge Fetes Winners Of Sales Campaign

Honor Salesmen Visit Muskegon, Detroit Plants, See Play, Attend Banquet

By Elston D. Herron

DETROIT, Sept. 7.—A hard-hitters' holiday will end for 100 Norge crack salesmen tonight at a banquet in the ballroom of the Detroit-Leland hotel, where their chief, Major Howard E. Blood, president of Norge Corp., will commend them for their work during the summer months, tell the story of Norge's rise from a St. Louis alley tool shop to its present position, and urge Norgemen to greater sales efforts in the fall-and-winter sales contest which opens Sept. 15 for three months' duration.

The banquet will bring to a close two pleasure-packed days in Detroit and Muskegon for the two salesmen from each Norge distributorship who made the most outstanding sales performances in their respective areas during the Norge Extra Power contest which began July 11 and closed Aug. 27. The two-day program of events was in charge of John H. Knapp, vice president in charge of sales, and J. A. Sterling, Norge sales promotion manager.

At the close of the banquet, Major Blood, who will act as toastmaster, is to present a Nash Standard Eight sedan to the salesman who ranked above all Norge salesmen in the contest. The runner-up in the Extra Power campaign will be awarded a Waltham wrist watch. Norge sales executives were still working over figures from distributors at the time the NEWS went to press, and had not yet determined the winners of these prizes.

The visiting salesmen began registering for the get-together at 7:45 o'clock yesterday morning. By 9 o'clock, registration and room assignments had been completed, and the 100 star salesmen assembled in the Detroit-Leland ballroom for breakfast. There they were officially welcomed by John Knapp, and informed by Jim Sterling of the two-day program ahead of them. Knapp

(Concluded on Page 2, Column 4)

Few Manufacturers Are Reporting Profits

NEW YORK CITY—Few of the important electric refrigerator manufacturers will report more than slight profits, at best, this year, and many of the less firmly established concerns will experience deficits, according to a report on the electric refrigeration industry in Standard Trade and Securities for Aug. 26.

Household units marketed in the initial half of the current year, according to the report, totaled 589,955, compared with 597,454 in the corresponding period of 1931. Aggregate dollar sales, however, were about 18 per cent lower.

The moderateness of this decline in unit sales, in the face of the acute restriction of trade in general, provides ample evidence that distribution will expand sharply along with recovery in public purchasing power, states the report.

Radio and automobile accessory com-

(Concluded on Page 11, Column 4)

LITKA, REDCAY WIN LEN-A-DOER CONTEST

DETROIT—Salesman Frank J. Litka, Chicago, has been announced as winner of a $50 prize, and H. L. Redcay, Washington, D. C., winner of a $25 prize in the Len-A-Doer retail sales contest sponsored by the Leonard Refrigerator Co. here, from July 15 to Aug. 31.

The $50 prize was awarded to Litka for being the first Leonard salesman to make 10 sales after the campaign opened, while Redcay claimed the $25 award for being the first to make five sales after July 15. The name of the salesman who will receive the $100 prize, for securing the greatest total of retail sales in dollars during the contest period, has not been announced, according to Max Romig of the Leonard organization.

All salesmen making five sales during the contest will receive a Gladstone bag. Ten sales entitle a salesman to a wrist or pocket watch, while 15 sales qualify a salesman for both the bag and watch.

Some Leonard salesmen who reached a total of five sales late in the contest are: J. A. Tafelski, Bay City, Mich.; Carl H. Sturmer, Port Huron, Mich.; J. W. Harrell, Wynne, Ark.; C. D. Davenport, Los Angeles; Bruce L. Smithwick, Wilmington, Del.; Joe Pichette, Racine, Wis.; A. H. Nichols, Washington, D. C.; and E. E. Byers, Houston, Tex.

KANSAS CITY DEALERS GIVE FREE ELECTRIC CURRENT

KANSAS CITY, Mo.—Featuring a free electric current offer, a cooperative advertising and sales campaign, sponsored by the Electric Refrigeration Bureau, was held by 15 electric refrigerator distributors, their local dealers and the Kansas City Power & Light Co. from July 14 to Aug. 31, here.

Up to Aug. 27, 186 sales had been recorded, but this was not a complete list of all electric refrigerators sold during the campaign, according to C. F. Farley, chairman of the bureau and vice president of the Kansas City Power & Light Co.

Newspaper advertising, descriptive folders and "current coupons" were used to make the public aware of the campaign.

More than 90,000 descriptive folders

(Concluded on Page 11, Column 4)

900 HEAR FRIGIDAIRE PLANS IN NEW YORK

NEW YORK CITY—An uproarious New York City Frigidaire sales organization shouted its approval of the fall selling program when it was presented to its 900 members last week in a mass meeting held at the Astor hotel.

E. G. Biechler, president and general manager of the company, was here for the occasion and took the platform twice during the session, once to give the metropolitan organization his personal views regarding the opportunities electric refrigeration salesmen have during the remainder of 1932, and again to thank the salesmen and dealers attending for the clamorous manner in which they received the company's fall program.

B. B. Geyer, head of the Geyer Co., Frigidaire's advertising agency, outlined the $500,000 advertising campaign which has been planned and announced that in addition to schedules already arranged, copy on the Frigidaire $112 price will also be carried in the *Saturday Evening Post*.

C. M. Eakin, manager of Frigidaire's New York area, acted as keynote speaker and master of ceremonies.

DEALERS INCREASE FRIGIDAIRE FLOOR STOCKS

OMAHA—Frigidaire dealers are increasing floor stocks in Des Moines and Omaha territory in preparation for the national announcement of new Frigidaire prices to be made Oct. 8, according to L. J. Strain, manager of the local sales district.

Strain last week held meetings of dealers and salesmen in the two cities mentioned above.

MAYFLOWER ACCOUNT GOES TO HENRI, HURST & McDONALD

DAYTON—Trupar Mfg. Co. has placed its Mayflower refrigerator advertising account with Henri, Hurst & McDonald, Chicago.

The account was formerly with J. Horace Lytle of Dayton.

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SERVEL OPENS BRANCH QUARTERS IN ST. LOUIS

ST. LOUIS—Servel Sales, Inc., has opened a new branch office and salesroom on the ground floor of the local telephone company's office building at 1008 Pine St.

The new branch will conduct retail selling operations on both the Servel electric refrigerator and the Electrolux gas refrigerator.

Jack Teeter, Servel representative in the St. Louis territory for the past several years, is now acting in the capacity of branch manager, and is working with a crew of 25 salesmen in the opening sales drive of the branch operation.

There is a showroom on the first floor of the branch offices in which both Servel and Electrolux models are displayed. Teeter's office is on the first floor.

The second floor houses a salesroom where daily sales meetings are held, a store room for advertising literature, and an exhibition of the Servel commercial line.

CARRIER WILL APPOINT DISTRIBUTORS, DEALERS

(Concluded from Page 1, Column 1)

as heretofore through a contract installation department.

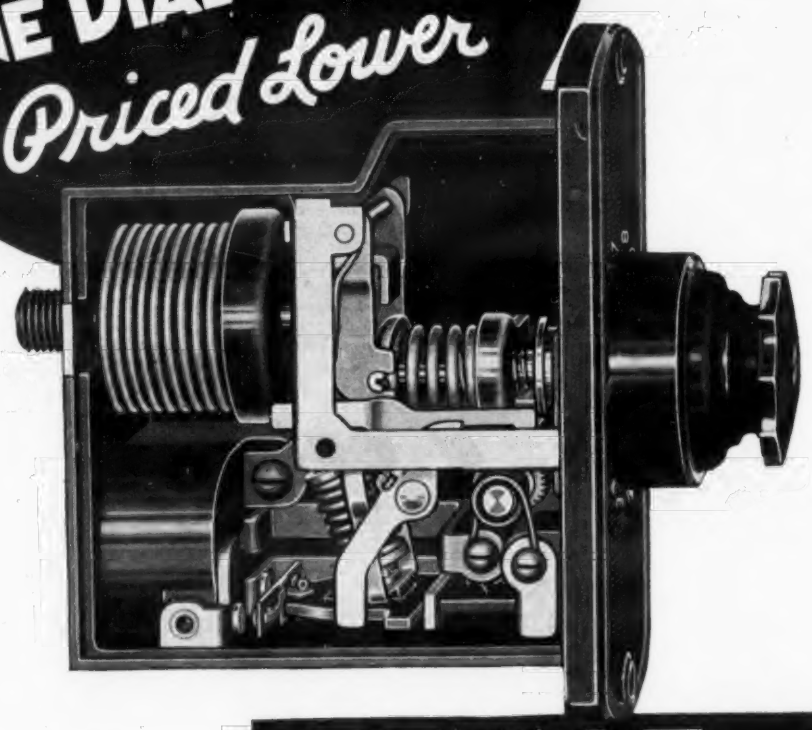
"Our research and engineering development facilities," said Mr. Lyle, "are such that we can determine what products are best suited to sale on a merchandise basis through dealers, while the experience that our organization has had in the design and application of different types of air-conditioning systems has shown the limitations that exist against the merchandising of all types of air conditioning immediately.

"We expect eventually to standardize still other lines of equipment and release them for merchandising," he announced.

The recent introduction of much new equipment designed for the air-conditioning market emphasizes, in Mr. Lyle's opinion, the importance of carefully maintaining high standards of performance in order to safeguard the public's good will.

"The industry is passing through a phase in its development which will require the cooperation of manufacturers and dealers to prevent the over-exploitation of equipment which will fail to give the kind of service expected by the user," he said.

Now! a New Simplified ONE DIAL CONTROL Priced Lower



PENN Type D REFRIGERATION CONTROL

● *This photographic reproduction of Penn Type D is actual size. Note the compact, rugged construction of the inside mechanism.*

Now Penn presents one of the greatest engineering advances ever made in the field of domestic electric refrigerator controls . . . Penn Type D, a compact, attractive, greatly simplified and highly accessible One Dial Control, easily mounted and easily serviced.

The One Dial is used for raising and lowering temperatures, and for starting and stopping the unit. With its attractive dial plate, it gives a fine symmetrical appearance with fewer controller handles, further enhancing the beauty of your machine and adding to its sales appeal.

Easily Adjusted Range and Differential

Both the range and differential may be adjusted from the outside . . . without removing either the knob or the switch, and these adjustments are not exposed, but are enclosed and absolutely fool-proof. There are no peepholes for overload indication, because this is also taken care of in the knob assembly.

Less Chance for Shorts

This inside mechanism is compact, sturdy, and highly perfected. It provides a greater amount of electric clearance and therefore, less chance for shorts and dielectric losses. When resetting the machine, or when it is in a running position, the overload trip is free to operate.

In many other similar controls, one tooth which engages the ratchet wheel, is subjected to daily use for both starting and stopping the unit, as well as for overload protection. Penn Type D eliminates this constant use, by providing a separate latching mechanism, assuring longer life.

Easily Mounted - Interchangeable

Penn Type D employs pony electric connections. It may be mounted from either the back or the front, instead of the old one way mounting employed by others. It is interchangeable on baffle plates with other controls, consequently you can start using Penn Type D immediately.

In this fast moving, modern industry, here now is one more great advancement. Don't fail to take advantage of the opportunity it offers you to further simplify your units, both in assembly and service. Write at once for complete information and new attractive prices. Ask for Bulletin G.A.1.

● *For all refrigeration control requirements, consult Penn engineers. We manufacture a complete line of simplified, reasonably priced controls for all types of domestic and commercial refrigeration systems, refrigerated trucks, and trains, air conditioning, etc. Write for complete information.*

PENN ELECTRIC SWITCH CO.
DES MOINES, IOWA

Export Department
15 Laight Street, New York

Eastern Distributors
Preferred Utilities Mfg. Co.

Offices in New York, Boston, Chicago, Detroit, Philadelphia, San Francisco, Los Angeles, Seattle, Milwaukee, Minneapolis, St. Louis, Buffalo, Cincinnati, New Orleans, Kansas City.

Norge Entertains Winners of 'Extra Power' Sales Campaign

(Concluded from Page 1, Column 5)

also introduced factory officials and various field representatives.

Breakfast over, they were taken in a fleet of cabs to the Union station, where they boarded a Pere Marquette special train for Muskegon, Mich., home of the Norge cabinet factory. Five hours later, the train stopped on a siding at the Norge plant, where Herb Morley, cabinet plant manager; H. L. Spencer, national service manager; and Ernie Graham, also of the Muskegon plant staff, greeted the salesmen-guests.

Accompanying the salesmen from Detroit to Muskegon were John Knapp; C. D. Donaven, Norge secretary-treasurer; Jim Sterling; D. C. Roads, advertising manager; A. W. Seiler, executive vice president of Cramer-Krasselt Co. of Milwaukee, which handles the Norge advertising account; Harry W. Terry, Cramer-Krasselt vice president in charge of the Norge account, and Carl W. Brehm, Cramer-Krasselt's Detroit representative.

At the entrance to the Muskegon plant, the 100 salesmen were divided into small groups, with a guide assigned to conduct each party through the factory.

Lumber Curing

The Norgemen first saw the large piles of lumber used in constructing Norge cabinets, and the kilns used in drying and curing the woods for use in cabinet construction. They were then shown the wood-working department, where lumber is cut to specified sizes and treated with an air-baked prime coat to make it moisture-proof.

Next came the assembling department, where cabinet frames are constructed and sent on a conveyor to the insulation department. Having seen the operations necessary to build the frame and insulate it, the salesmen were next shown the metal department, where giant presses and shears fashion various metal parts for Norge refrigerators from sheet steel.

Guides then pointed out and explained the application of exterior steel to the wooden frames, and conducted the salesmen through the bonderizing department, where the exterior steel is chemically treated to make it rust-resistant.

Salesmen then saw the various operations of departments which apply enamel and porcelain enamel to the cabinets. Tours of these sections completed, the guests were taken to the plant division where Norge rollators—manufactured in Detroit and shipped to Muskegon—and other mechanical parts are installed in the cabinets.

Guides then took their parties to the inspection department, where completed units are approved or rejected, and then through Norge laboratories, where all raw materials are tested before being released for use in production.

At the close of the 3½-hour factory tour, salesmen saw the crating department.

Rollator Factory

Today was to be a busy one for the star performers of the Norge sales organization. At 8:15 o'clock this morning, they were to breakfast at the Detroit-Leland and again hear Vice President Knapp and Jim Sterling make short talks.

At 9 o'clock they were to go by bus to the Norge rollator factory, where a tour of all departments was to be made. At present, the rollator plant is not in operation, as all manufacturing equipment there, according to Sterling, is to be moved shortly to the Detroit Gear and Machine Co. plants, where the Norge executive offices are located.

Today's luncheon, following the rollator factory tour, will be one of the most gala affairs of the two days' events. Jim Sterling is to act as toastmaster, and introduce M. G. O'Harra, New York City, Norge eastern sales manager; and R. E. Densmore, Chicago, the company's western sales manager, both of whom will make short addresses congratulating the salesmen on their summer records, and pointing out the advantages of renewed activity in the approaching contest.

John Knapp is to make the final address at the luncheon, in which he will discuss present-day sales problems, and tell salesmen how to increase their sales volumes.

One of the luncheon's entertainment features will be a radio program over "station N O R G E." On the speakers' table will be a radio receiving set and loudspeaker wired to bring to the ballroom the songs and piano numbers of Corine Muer and Frank Gillen, Detroit entertainers, who will be stationed in a room adjacent to the ballroom.

At 2:30 o'clock this afternoon, the entire party was to have attended "The Pass Show" at the Cass theater.

The banquet at 7 o'clock tonight will bring to a close the salesmen's playday, and will have as its purpose that of sending the star performers home to make even better sales records. Most of the Norge Corp. executives will meet with the salesmen for the affair.

Besides Major Blood's address, and his presentation of the Nash sedan and wrist watch to the two leading salesmen, John Knapp and C. D. Donaven will speak, giving the salesmen a send-off for a new selling season.

Frank Gillen's orchestra is to furnish the dinner music, and Corine Muer's dancers and entertainers will perform for the guests. During the evening, a movie will be shown, portraying interesting operations in the Muskegon plant, and showing pictures of activities at Muskegon on one of the Norge's reddest red-letter days—April 29 last, when five trainloads of Norge refrigerators left the Muskegon plant, with Major Blood at the throttle of engine No. 1.

Factory Officials

Factory officials and others connected with Norge Corp. who will attend the banquet with the salesmen are as follows: Major Blood; C. D. Donaven; John H. Knapp; Jim Sterling; Herb Morely; Ira H. Reindel, assistant to the president; H. Avery, superintendent of the Detroit plant; W. McKiggan, purchasing agent; D. C. Roads; A. R. McMillan, sales development manager; Ernie Graham.

H. H. Whittingham, assistant secretary-treasurer; Charles Watkins, auditor; A. G. Moncreiff, assistant auditor; J. Garner of the accounting department; John Buchanan and Earl Hubacker of the engineering department; M. G. O'Harra; R. E. Densmore; Norge District Representatives J. E. Oliphant, Harry Fleischer, W. C. Rowles, I. R. Blocher, and T. P. Hallock.

V. K. Tremblett of Norge Kitchen Savings, company house organ; Ben Greenhouse, Sampson Electric Co. of Chicago, Norge distributor; John Drake, advertising and sales promotion department; R. G. Martin, Ludwig Hommel & Co. of Pittsburgh, Norge distributor; A. H. Zimmerman and H. O. Ferguson of Republic Sales Corp., Detroit, Norge distributor; W. G. Gaston, sales promotion manager, Norge Co. of Missouri; A. W. Seiler; H. W. Terry; G. E. Stedman, vice president of Cramer-Krasselt Co. in charge of market planning; and Carl H. Brehm.

Salesmen Present

Salesmen who attended the two-day meeting were as follows: J. L. Wilson and Fred Lofgren, Adams Co., Waterloo, Iowa; Harold Beck and E. H. Diehl, Charleston Electric Supply Co., Charleston, W. Va.; Nathan Feldman and Joe Wayner, General Equipment Corp., Boston; Verle Hains and R. K. Stafford, Gibson Co., Indianapolis; W. L. Myers and R. R. Kaufman, Ludwig Hommel & Co., Pittsburgh.

Leo M. Saul and R. E. Agnew, Norge Co. of Missouri, St. Louis; Cyrus Poppler and George Hartsell, Reinhard Bros. Co., Inc., Minneapolis; Dale J. McGinnis and Theodore Johnston, Sampson Electric Co., Chicago; E. R. Sauermilch and P. C. McHaney, Southern Equipment Co., San Antonio, Tex.; L. Q. Homan and R. R. Birkheimer, Strong, Carlisle & Hammond Co., Cleveland.

Francis N. Ashford, Sunset Electric Co., Portland, Ore.; Gaylord Palmer and Jim Planque, Satcliffe Co., Louisville, Ky.; Gus Florence, Jack Gartman, W. K. Balbridge, J. R. Davis, Elgin Akers, all from Texas Radio Sales Co., Dallas, Tex.; and W. S. Lewis, Paul Blackwell, Homer Campbell, and Doc Solber, all connected with the managerial force of the latter company.

Joel Levitt, Herman Jacobs, Carl Mattehs, and H. J. Snavely, Trilling & Montague, Philadelphia; P. R. Besserman and Harry Plissner, World Utilities Corp., New York City; Jack Henderson, Columbia Wholesalers, Inc., Baltimore.

J. E. Robbins, Leo J. Meyberg Co., Los Angeles; R. R. Long and E. A. Van Vechten of Leo J. Meyberg Co., San Francisco; J. C. Rutherford and M. E. Lowe of Republic Supply Co., Detroit; W. Z. Stolzbach and P. Hespolsheimer, both of W. M. Dutton & Sons Co., Hastings and Omaha, Nebr.

H. L. Leintz, Adams Co., Inc., Waterloo, Iowa; A. Anderson and F. F. Jewson of Gross Hardware & Supply Co., Milwaukee; Melvin Locken, Reinhard Bros. Co., Minneapolis; H. C. Klein, Auto Equipment Co., Denver; Mr. Johnston, F. W. Oxley and G. A. Palmer, all of Benjamin T. Crump Co., Richmond, Va.

F. Greenwald and E. C. Crouse of Harten Knodel Distributing Co., Cincinnati; Mr. Hoppner, Satcliffe Co., Louisville, Ky.; A. Reaves, Automatic Sales Co., Houston, Tex.; Jack Ruble and B. O. Tolleson of Brown Electric Co., Oklahoma City; W. E. Pennell and P. Schuerdtfeger, Moser & Suor, Inc., Kansas City, Mo.

Ray Coates, Birmingham Electric Battery Co., Birmingham, Ala.; R. A. Coleman and E. E. Hyde, Gambill Distributing Co., Nashville, Tenn.; R. G. Martin, Ludwig Hommel & Co., Pittsburgh; R. J. Mogoni, S. D. Courville, J. A. Felts, O. W. Jordan and L. E. Mullen, all of Stauffer Eshleman & Co., New Orleans; George Leightner, refrigeration manager of the same concern.

D. G. Knowles, Columbia Wholesalers, Inc., Baltimore; F. W. Wolfinger and H. Van Duzer of Onondago Auto Supply Co., Syracuse, N. Y.; R. McDermott, E. J. Crosby and R. C. Blass of B. H. Spinney Co., Springfield, Mass.; Homer Scott, Auto Equipment Co., Denver; C. M. Pinkston and M. L. Hall, both of Gunn Distributing Co., Little Rock, Ark.

GIFT OF PUBLISHER

HOW SMITH and JONES BEAT the DEPRESSION!

1 SMITH AND JONES WERE IN THE HARDWARE BUSINESS. THINGS WERE VERY DULL IN THEIR SMALL TOWN.....

ANOTHER MONTH WITH NO PROFITS. IF THIS KEEPS UP WE'LL HAVE TO CLOSE OUR DOORS!

MAYBE IF WE TOOK ON A LINE OF ELECTRIC REFRIGERATORS, WE COULD MAKE A LITTLE MONEY.

2 ... AND SO THEY TALKED THE MATTER OVER..

...YES, THAT'S A GOOD IDEA, BUT HAVE WE GOT THE MONEY? IT MEANS QUITE AN INVESTMENT.

I HADN'T THOUGHT OF THAT.—A SERVICE TRUCK. SPARE PARTS—A COUPLE OF MEN IN THE REPAIR DEPARTMENT...

3 THINGS LOOKED BLACK UNTIL ONE DAY A **GENERAL ELECTRIC** SALESMAN APPEARED.

THE MONITOR TOP *COMPLETELY* SEALED-IN-STEEL MECHANISM.— NO SERVICE EXPECTANCY.— MANUFACTURER RESPONSIBLE FOR PRODUCT PERFORMANCE. NOTHING FOR OWNER TO NEGLECT OR TAMPER WITH.— SMALL INVESTMENT. RAPID TURNOVER.

4 NOW THEY SELL **GENERAL ELECTRIC** REFRIGERATORS.

BUSINESS CERTAINLY IS LOOKING UP. EVERYBODY SEEMS TO KNOW ABOUT AND PREFER THE GENERAL ELECTRIC!

—AND WITH MORE NEW PEOPLE COMING INTO OUR STORE, THE HARDWARE TRADE IS BETTER TOO!

ONE out of every three electric refrigerators operating in homes today is a General Electric. In five short years public preference has built an unmatched sales record for the famous G-E Monitor Top refrigerator.

This preference, based on performance, also indicates the effectiveness of the sales and merchandising support provided by the General Electric Company for the retailer. Outdoor advertising, local newspapers, nation-wide radio, national magazines and direct mail; special selling campaigns, salesmen's training, door-openers and slide-films of proved effectiveness—the most comprehensive program offered in the industry—is aimed at one goal .. quicker, easier G-E retail sales!

The uninterrupted, dependable performance of the famous Monitor Top mechanism has created a tremendous user good will. This record for continuous, trouble-free operation is also the retailer's assurance of greater NET profits. Every moving part of the G-E mechanism is hermetically sealed within the steel walls of the Monitor Top—subject to neither neglect nor abuse. Full responsibility for its performance is assumed by the General Electric Company. The G-E retailer is not burdened with a high overhead to support an expensive service department—he *keeps* his profits. General Electric Company, Electric Refrigeration Department, Section DF91, Hanna Building, 1400 Euclid Avenue, Cleveland, Ohio.

GENERAL ELECTRIC
ALL-STEEL REFRIGERATOR

ONE OUT OF THREE IS A GENERAL ELECTRIC

ICE ASSOCIATION TO SPONSOR 1933 DRIVE

CHICAGO—A national ice marketing service for 1933 will be sponsored by the National Association of Ice Industries and produced by the Rein Co. This will be a plan for the merchandising, advertising and employe training of the ice industry for next year, according to E L. Bennett, president of the National Association of Ice Industries.

Nine regional "preparational conferences" have been held to assist the editors of this service. These were conducted in Atlanta, Aug. 9; Philadelphia, Aug. 11; Indianapolis, Aug. 12; Kansas City, Mo., Aug. 16; Denver, Aug. 18; Portland, Ore., Aug. 23; San Francisco, Aug. 25; Los Angeles, Aug. 26, and Austin, Tex., Aug. 30.

At these conferences a prepared list of questions pertaining to every phase of the ice business was distributed to find out the weaknesses of present merchandising methods, and to receive suggestions for their improvement.

The data gathered at these conferences, along with the previous material obtained by the authors, editors and publishers of the "Southwestern Plan" and the "1932 Rein Plan," its successor, will be utilized in framing 1933 plans.

With the completion of the conferences, the marketing service committee, headed by Frank B. Ostermuller, the editors and the marketing specialist will have a composite picture of what jobs must be undertaken by the new marketing, advertising and employe training program.

The "Southwestern Plan" is the forerunner of the national program. A group of ice men in the Southwest had been working on a marketing plan for more than three years, according to Bennett, and this year brought out one that has been used in many sections.

TRILLING & MONTAGUE CO. HOLDS DEALER MEETING

PHILADELPHIA—Trilling and Montague, distributor of Electrochef and Electrochef Waldorf ranges, and Norge refrigerators, in eastern Pennsylvania and southern New Jersey, recently held a meeting for 300 of its dealers, as part of the electric range drive planned by the local Electric League.

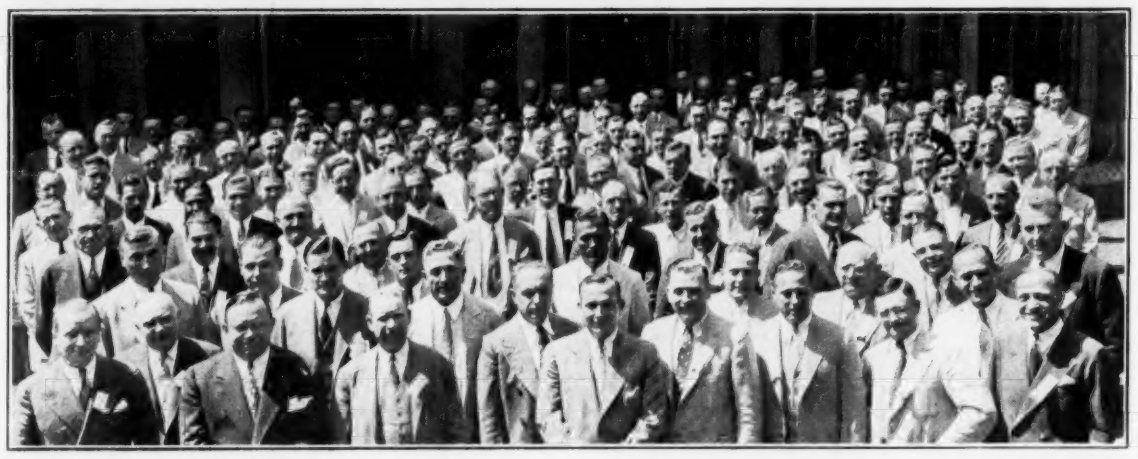
Speakers at the meeting included Sherman Giselle, manager of the Philadelphia Electric Association range campaign; George Whitwell, vice president of the Philadelphia Electric Co., and Prof. Gerald Fitzgibbon, "sales psychologist."

R. B. Marshall, general manager of Electromaster, Inc., talked on electric cookery and possibilities of the electric range business. Gerald Hulett, sales promotion manager of Electromaster, addressed the meeting on sales methods, and Parker Holden, president of Holden McKinney and Clark, advertising counsel, talked on merchandising.

LEONARD DEALER NAMED

OMAHA—The Union Outfitting Co., largest department store here, has recently become a retail outlet for the Leonard electric refrigerator.

Frigidaire Distributors Meet In Dayton



Distributors from all sections of the United States met in Dayton recently to hear factory executives announce the price reduction which makes a 4-cu. ft model available for $112 plus freight.

How To Distribute Major Appliances

As Practiced By Bard & Barger, G. E. Distributor

By Elston D. Herron

COLUMBUS, Ohio—Top-notch salesmen are men who have "sold themselves" on their product—not those who are merely prepared to recite in A-B-C fashion their appliances' selling points.

Believing this to be true, Bard & Barger, General Electric distributor in Columbus and Cincinnati, has made this idea the foundation of all its sales activities.

The organization sells General Electric refrigerators, Hotpoint ranges, dishwashers, ironers, washing machines, vacuum cleaners, and sewing machines.

"No man is prepared to sell any appliance until he is convinced that it is the best on the market—until he is enthusiastic about it, and wants one for his own home," says G. L. Thompson, Bard & Barger store manager in Columbus.

Belief in Product

All training given salesmen, and all sales meetings in the organization have as their chief interest that of creating in the salesmen themselves the conviction that General Electric appliances are the best on the market.

While given much attention, the actual technique of selling is of secondary importance in salesmen's training, says Mr. Thompson, because even great sales skill is not often effective unless there is behind it the salesman's own faith in his product.

"Belief in their product," says the store manager, "gives salesmen one great advantage over those whose training consists chiefly of instruction in making sales presentations: the latter are inclined, usually, to become discouraged by refusals, while the former think, 'I know this is a good product, because I'd like one myself,' and so keep on in spite of numerous refusals."

Such an attitude is achieved in Bard & Barger salesmen, according to Mr. Thompson, by training them in minute detail in every phase of the appliances they sell—not only in "what to say to the housewife," but in the equipment's operation, construction, effectiveness, comparison with other makes, features, etc. Meetings designed to give such instruction are held each morning for all salesmen.

Better Than 'Canned' Speech

The distributor feels that this thorough training so acquaints salesmen with their product that they will acquire for themselves a sales presentation far more convicing than any which might be given to them in "canned" form by a hasty study of the technical points of the equipment plus a detailed outline of points to be used in sales talks.

Salesmen of General Electric refrigerators, dishwashers, and Hotpoint ranges are also privileged to sell the G. E. washing machines, ironers, vacuum cleaners, and sewing machines, but are urged to concentrate their sales efforts on the first three appliances.

A separate staff of 12 men is employed by the distributor to specialize on sales of the latter group of appliances, which are sold only in metropolitan Columbus. Any member of this group, although not permitted to sell refrigerators, ranges, and dishwashers, is paid $5 for discovering a prospect who buys one of these three appliances.

15 Retail Salesmen

Fifteen men are employed as retail household salesmen of refrigerators, ranges, and dishwashers. Five men comprise the commercial sales staff. One man specializes on apartment house sales and handles all sales promotion work. He is paid on a salary and small commission basis.

Although several apartment houses equipped with General Electric refrigerators have been taken over by building and loan associations which financed their construction, these associations have made remaining payments on the refrigerators promptly, according to the store manager.

The distributor has one dealership in Columbus, the C. C. Robinson Co., which has a staff of 17 salesmen. This dealership handles its own finance problems, but is given delivery and repair service by the distributor.

Commission Basis

All salesmen are employed on the commission basis. Retail household salesmen are paid weekly, and get a 10 per cent commission on each sale. In addition, they receive a 4 per cent monthly bonus if they have sold their quota during the month past. Another 1 per cent of their sales totals is paid them if they sell 100 units during the year.

Commercial salesmen are paid a straight 10 per cent commission on each sale.

Mr. Thompson states that the Bard & Barger system of training and paying salesmen is effective in reducing sales force turnovers to a minimum, and points out by way of illustration that of the staff of 15 retail household salesmen, nine have been with the company for periods ranging between two and one-half to four and one-half years.

Eliminate Discount

A feature of the distributorship's sales policy is its scheme for eliminating discounts and trade-ins. When a salesman joins the organization, he is required to sign an agreement to the effect that he will make no sales at a discount, and will take no used equipment as partial payment for a General Electric appliance.

Each permanent salesman is assigned to one sales zone in the Columbus area. During the spring-and-summer season, each permanent salesman is given an assistant, called a "junior salesman," who is paid on a straight 10 per cent commission basis. Senior salesmen receive any bonuses resulting from monthly totals of junior sales.

At the end of the peak season, that junior salesman who has made the best record during the four-month period is retained by the distributor as a permanent member of the sales staff. Other juniors are dismissed, their prospects being turned over to their respective senior salesmen.

25 Calls Daily

All salesmen are required by the company to make 25 canvass calls each day, a list of 25 names (taken from the city directory) being supplied to each salesman every morning. Salesmen are provided with sales literature from the factory, to use as handout material or as direct-by-mail matter.

Until recently, Bard & Barger operated 10 "display dealerships,"—sales rooms located at various points throughout Columbus, to which salesmen could take prospects for demonstrations. Each display point was in charge of a "display dealer," a store owner who provided space for displays in return for commissions on sales made in his showroom.

Withdraw Displays

This system was found to be ineffective, however, because display dealers failed to cooperate properly with salesmen, and withdrawal of the displays was started in March, and completed July 15, according to Mr. Thompson.

Bard & Barger endeavors to keep some sort of contest going constantly among its salesmen, and when the factory is not sponsoring a contest, the distributorship holds one of a localized nature. Mr. Thompson says that these contests are invaluable in keeping salesmen keyed up to the proper selling pitch.

The company insists that its salesmen keep in close touch with all significant events and developments in the field of electric refrigeration, and requires that every man read in ELECTRIC REFRIGERATION NEWS, each week, those stories deemed most important by company officials.

Plan on Walk-in Prospects

Bard & Barger has adopted a scheme for selling G. E. equipment to "walk-in prospects"—persons who come to the sales room without first being approached by salesmen — which Mr. Thompson says is one of the most effective sales methods the company has ever used.

This plan is based upon two principles:

1. Don't knock.

2. Don't give a high-pressure sales talk.

When a person enters the Bard & Barger salesroom and announces that "he is just shopping around to see which make is best," the salesman present refrains from saying anything against products of competing manufacturers, and makes no sales talk other than the statement that "General Electric appliances are designed to give the utmost satisfaction to users."

Little is said about the equipment being examined, unless the prospect asks specific questions about it.

The lack of pressure exerted often clinches the sale for General Electric with this type of prospect, the manager says, since the prospect has oftentimes been first to other showrooms where salesmen have tried to make an immediate sale, and have consequently made the prospect timid about even professing his intrest in any appliance, in the presence of a salesman.

The firm gives free cooking demonstrations in its model kitchen as one means of attracting attention to General Electric products. The kitchen, equipped with dishwasher, range, and refrigerator, is a unit of the General Electric Kitchen Institute, started several months ago at the Edison General Electric Appliance Co., Chicago.

Each Wednesday afternoon, Miss Jeanette Dunnick, home economist, holds a cooking school in the Bard & Barger kitchen, and demonstrates the G. E. equipment installed. Every salesman in the Bard & Barger organization each week distributes 10 tickets for the school to housewives who are prospects for kitchen appliances. The kitchen, says Mr. Thompson, has been a valuable aid in making sales.

The company exhibits equipment of all kinds at all fairs, cooking schools, builders' shows, and similar affairs held in Columbus, and believes that displays at such places are beneficial in securing prospects and buyers.

MILK KEEPS FRESH FOR 20 DAYS IN NORGE TEST

KANSAS CITY, Mo.—Laboratory reports showed that the milk in the Norge "Keep Sweet" contest, conducted at the Plaza store of the Kansas City Power and Light Co. from July 18 to Aug. 6, remained sweet for 20 days, 18 hours, 15 minutes and 10 seconds.

Fifty pint bottles of Aines grade "A" pasteurized milk was placed in the refrigerator and six prizes were offered for the best guesses as to the length of time that the milk would keep sweet in the Norge.

First prize was won by Frank P. Barker, 613 West 59th St., whose guess was 20 days, 9 hours and 10 minutes.

A second test was conducted at the downtown store of the Power and Light Co. from July 21 to Aug. 17. At this store the milk remained sweet for 27 days, one hour, 45 minutes and 50 seconds. First prize was awarded to Mrs. Lottie L. Fraser, 3217 East Seventh St., whose guess was 27 days, two hours and 14 minutes.

These tests were conducted during a severe hot spell. Displays were in closed windows on the sunny side of the building, offering no ventilation and under the beating sun most of the time. A thermometer placed in the window registered around 110° F. the greater portion of the time.

OKLAHOMA DISTRIBUTOR OPENS TULSA BRANCH

OKLAHOMA CITY—Spurrier's, Inc., of this city, Leonard distributor, has opened a branch at Tulsa, Okla., in which will be carried a representative stock of Leonard refrigerators and a complete floor display.

Paul Smith, who has been with Spurrier's as a wholesale representative, will be manager of the new branch.

G. E. DISTRIBUTOR AWARDED TWO GOLD MEDALS

PALESTINE, Egypt—At the recent Levant Fair held here the British Thomson-Houston Co., Ltd., distributor for General Electric refrigerators, was awarded two gold medals.

The first medal was presented in recognition of the Monitor Top refrigerator, and the second in recognition of the General Electric radio.

Customer Relations...

Even if only 1 in 1000 complain
—about the refrigerator service
—or about the current consumption
Facts, not arguments, banish doubt

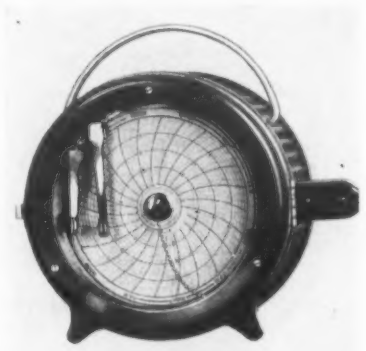
WHEN the electric refrigerator you have sold the housewife is giving trouble, it's a good time to call in BRISTOL'S Model 144T Time and Temperature Recorder.

Let the housewife say the refrigerator is not making enough ice cubes, or making them too slowly! Don't argue. Even when she claims the motor runs too long or too often, remember that facts, not arguments, will save the day.

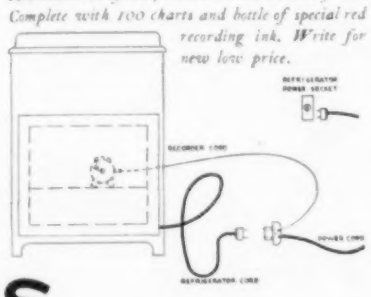
Model 144T enables you to base your judgement on authentic recorded facts. Our Bulletin 381 is available giving you full information on this handiest little servicing instrument you can own.

THE BRISTOL COMPANY
WATERBURY CONNECTICUT

Branch Offices: Akron, Birmingham, Boston, Chicago, Denver, Detroit, Los Angeles, New York, Pittsburgh, Philadelphia, St. Louis, San Francisco



BRISTOL'S Model 144T Time and Temperature Recorder, for recording both refrigerator temperature and "on" and "off" motor periods. Placed between refrigerator shelves it gives on one chart a continuous record for 24 hours, or 3 days if desired. Diameter of case, 6 inches; of chart, 4 inches. Aluminum alloy case, black or white enamel finish. Complete with 100 charts and bottle of special red recording ink. Write for new low price.



BRISTOL'S for Refrigerators
TIME AND TEMPERATURE RECORDERS

NEW McCORD EVAPORATOR GUIDE BOOK

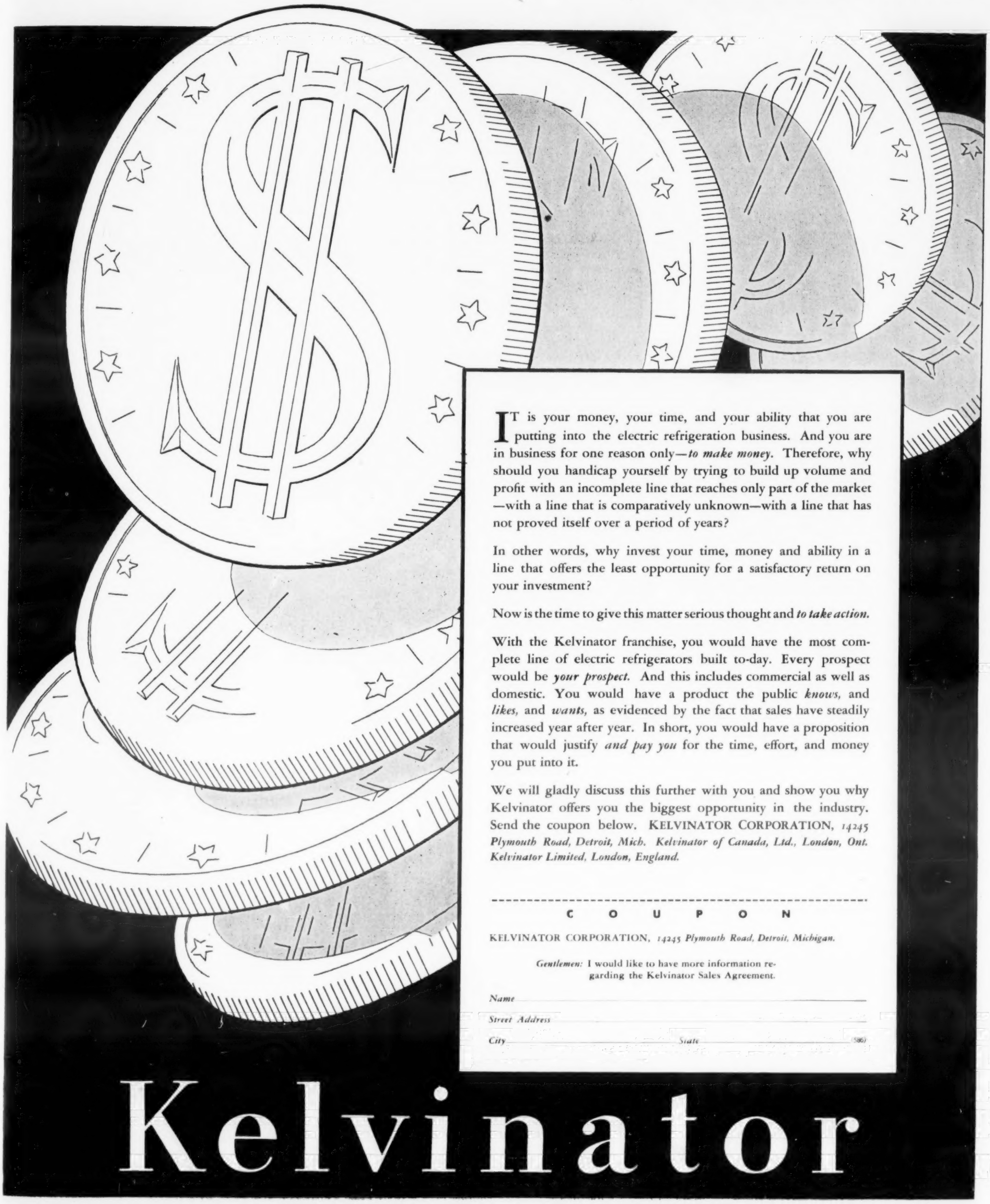
SHOWS THE McCORD EVAPORATOR TO BE USED IN ANY TYPE OF BOX AND INSULATION, AND IN ANY GIVEN CLIMATE.

May We Send You A Copy?

McCORD RADIATOR & MFG. CO.

DETROIT, MICH.

WHY SHOULD YOU *Waste It?*



IT is your money, your time, and your ability that you are putting into the electric refrigeration business. And you are in business for one reason only—*to make money.* Therefore, why should you handicap yourself by trying to build up volume and profit with an incomplete line that reaches only part of the market—with a line that is comparatively unknown—with a line that has not proved itself over a period of years?

In other words, why invest your time, money and ability in a line that offers the least opportunity for a satisfactory return on your investment?

Now is the time to give this matter serious thought and *to take action.*

With the Kelvinator franchise, you would have the most complete line of electric refrigerators built to-day. Every prospect would be *your prospect.* And this includes commercial as well as domestic. You would have a product the public *knows,* and *likes,* and *wants,* as evidenced by the fact that sales have steadily increased year after year. In short, you would have a proposition that would justify *and pay you* for the time, effort, and money you put into it.

We will gladly discuss this further with you and show you why Kelvinator offers you the biggest opportunity in the industry. Send the coupon below. KELVINATOR CORPORATION, *14245 Plymouth Road, Detroit, Mich. Kelvinator of Canada, Ltd., London, Ont. Kelvinator Limited, London, England.*

C O U P O N

KELVINATOR CORPORATION, *14245 Plymouth Road, Detroit, Michigan.*

Gentlemen: I would like to have more information regarding the Kelvinator Sales Agreement.

Name _____

Street Address _____

City _____ *State* _____ (586)

Kelvinator

MERCHANDISING SECTION ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Refrigeration Industry

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Department Stores Rise

UNHERALDED and unsung, a bitter fight is said to have been waged during the last two or three years between public utilities, on one hand, and retail merchants (under the leadership of department stores), on the other. Today it appears as if the department stores have given the utilities a sound trouncing.

Merchandising of appliances by public utilities has been the bone of contention. Department stores, which do a considerable business in electrical appliances, don't like central station competition. And so they set about to attack it on two fronts: (1) legislation, and (2) cooperation.

In the spring of 1931, bills to prohibit public utility merchandising were introduced in a number of state legislatures almost simultaneously. The campaign, led in each state by associations of retail merchants, was too well timed and coordinated to have happened accidentally. It caught the central station executives off guard. Before they could get their lines out, anti-utility legislation had been passed in Kansas and Oklahoma (which was the bailiwick of the then president of the N. E. L. A.!), and power company men were given good scares in several other state general assemblies.

This year organized retail merchants have made few overt attempts to seek the passage of prohibitive legislation against their rivals. But they have been using this club as a threat. So effective has the threat been that utility merchandising in 1932 is at its lowest ebb in years.

Second method of attack has been cooperation. Under the leadership of President Kelly of The Fair store in Chicago, a joint merchandising committee was formed from representatives of the N. E. L. A. and the National Retail Dry Goods Association. This committee was to work out a set of merchandising principles and a code of ethics. It did. Mr. Kelly spoke before the 1931 N. E. L. A. convention. He spoke elsewhere. His speeches were to the point. Department store representatives, aggrieved and aggressive, apparently dominated the thinking of the joint committee. This mode of attack, too, has worked.

Unexpected aid came to the department stores from—of all places—utility holding companies. Shrinkage in stock values and other depression products put many holding companies in a jam. The Insull pyramid toppled, thus ending the dream of empire envisioned by brothers Samuel and Martin. Other holding companies called on their properties for help. And central stations which had been doing a good merchandising job found themselves without funds to buy display stocks of refrigerators, to promote their sale, or to finance time payment purchases. For the most part, purchases of electric refrigerators by power companies this year have been hand-to-mouth.

Confident that they were making headway with their attack on the merchandising activities of utilities—which are highly sensitive to any form of adverse public opinion, and which will go to great lengths to avoid arousing sleeping dogs, especially since the dogs already seem to have one eye open—department stores went into the electric refrigeration business with a vim last fall.

First thing the department stores did was call for a refrigerator with a list price below $100. They claim sales figures show them that whenever the price on an appliance gets below the century mark, they can begin to sell it in satisfactory volume. Not getting quotations this low from established electric refrigerator manufacturers, they encouraged others to enter the business. Hence the $99.50 refrigerator of unknown brand was born. And the whole industry was thrown into a turmoil.

Today the situation stands about as follows:

1. Small dealers have been finding it increasingly difficult to finance time payments.

2. Public utilities are gradually withdrawing from the merchandising picture.

3. Department stores are planning an unprecedented expansion of their electrical appliance departments.

Importance of department stores in the retailing of electrical appliances is often overlooked by industry from the automotive field, or who have not previously had much experience in the merchandising of appliances. It has been estimated, although we cannot vouch for the accuracy of the figures, that in 1931 the retail distribution of electric refrigerators was divided up among various types of outlets as follows:

Electrical specialty dealers, 26.3%; electrical contractors, 17.6%; public utilities, 15.3%; manufacturers' branches, 12.3%; department stores, 11.75%; furniture stores, 6%; hardware stores, 5%; miscellaneous merchants, 5%; plumbing and heating contractors, 0.6%; jewelers, 0.1%, and drug stores, 0.05%.

Electric refrigeration is still most susceptible to specialty selling; but it appears to be entering the boom distribution stage, in which department stores usually figure heavily. Even more true does this prognostication seem when one considers that the chief market for electric refrigerators is now said to be among families whose annual incomes are less than $3,000. Department stores know how to sell to this class of customers.

Advantages of department stores as outlets for electric refrigerators include: (1) location; (2) store traffic; (3) reputation; (4) appeal to women; (5) habitual advertising, and (6) credit facilities.

Disadvantages of dealing with this type of outlet, from the standpoint of the manufacturer and distributor, may be summed up in the observation that department stores are hard buyers. No matter what discount is offered them, they never are satisfied. And like the utilities, their might and independence make them tough to negotiate with, and hard to hold in line on the matter of company policy.

One of the recognized old department store formulae—acquire a job lot, cut the price, advertise that price in newspapers, move a quantity in a short space of time, and then close the deal—has been worked over and over with electric refrigerators. Distributors and manufacturers alike have had plenty of headaches in their attempt to keep department stores sold on the idea of continuing to act as dealers for their refrigerators after holding the big sale. Usually the executives must be sold all over, and invariably the question of discounts comes up again.

Department stores usually want to stock several makes of refrigerators at the same time. That perturbs many distributors. Department stores also foster the quarter-a-day meter plan of payment, which evoked frowns from manufacturers and distributors (this idea is now waning).

Still another department store practice which has irked electric refrigeration men is that of using an established, well-advertised brand for a leader, and then selling customers a lower-priced, private brand, "just-as-good" refrigerator which is purchased directly from the manufacturer and on which the discount is greater. Distributors call this the "crucifixion method" of selling. Using a kindred metaphor, it might be termed the "betrayal method."

All of these things have combined to make manufacturers and distributors a bit leery about doing business with department stores. Having had their fingers burnt once or twice, they approach cautiously, if at all.

That the department store must be taken into account as an increasingly important factor in the industry, however, is admitted by most of the industry's chief executives. And it behooves every sales manager, whether of a manufacturer or distributor, to consider ways and means of capitalizing upon the rise of this type of outlet.

Letters from Readers

Automatic Stokers

Harry Alter Co.
Majestic Refrigerator Distributor
1728-30 S. Michigan Ave., Chicago
Aug. 27, 1932.

Editor:

I have yours of Aug. 25 with regard to the automatic stoker business.

For the past two months I have investigated this field to determine whether it lends itself to distribution similar to that of electric refrigerators.

I have found that even in the smallest domestic model a coal stoker must be installed by competent engineers. Practically all residential stokers are of the underfeed type, which means that the grates of the furnace or boiler must be removed and the fire box of the stoker set inside with masonery work and fire brick.

It seems to me that in order for the average dealer to become interested in automatic coal stokers, he would have to make of himself a heating engineer before he could even decide which type of stoker to sell.

If a good low-priced *overfeed* stoker were on the market, I believe a wide distribution could be had because the installation and engineering problems are entirely different from the underfeed.

Most coal stokers are designed and engineered for economy in fuel consumption. It is a great thing to save fuel, of course, and in large installations where hundreds of tons of coal are burned in a season, such engineering is not wasted.

But some of these manufacturers apparently have lost sight of the fact that the average householder doesn't buy more than 10 tons of coal. So they have developed machines with a lot of gadgets and with a lot of research engineering behind them just in order to save one or two tons of $6.00 coal per season.

I think people want convenience in their homes, and I think a stoker should be built that will not cost much money and will be convenient; and which will disregard elaborate engineering for fuel economy that will save the prospective buyer $12.00 per season in fuel costs.

HARRY ALTER,
President.

Beer Cooling

John H. Hunter, Inc.
1251 Elizabeth St., Brownsville, Tex.
Aug. 25, 1932.

Editor:

In the "Expansion Valve" of your issue of Aug. 17 I note with interest that the electric refrigeration manufacturers are turning longing eyes toward the beer cooling business.

The only question about the return of beer seems to be "when," and the only question about the use of mechanical refrigeration is "how much?"

However, there are a few questions in my mind about the business that I belive it is a good time for someone to start thinking about.

Naturally the first one is, how is this equipment to be sold, and will there be any profit in it for the dealer? Our industry is big enough and essential enough now to lay down some rules for the other fellow.

The ice cream cabinet business, as it is now being handled, would be a ludicrous mess if it were not so serious and so useless.

The fact that any small one-horse ice cream company can buy any products and repair parts for any products at from 15 per cent to 20 less from the factory than from an authorized dealer who does a volume of from $40,000 to $50,000 of business per year is an example of what direct sales proposition works itself into.

Direct sales to ice cream manufacturers in an early day may have been justified, and may still be justified to purchasers who would buy a carload of products at a time; but the selling of ice cream cabinets to small manufacturers on a basis of one or two a year, and these being resold to favorite customers as an accommodation or an inducement to get the retailer to handle their ice cream, is not good business nor fair business for anyone concerned.

The dealer who maintains his business in good times and bad, and is prepared and equipped to render service on machines at all times so that they will live up to whatever guarantee the factory takes a notion to write on them, is certainly entitled to a fair profit on the equipment sold in his territory.

The proposition that any ice cream manufacturer can get repair parts for any model of machines and especially models of machines that he has never bought, at 15 per cent to 20 per cent more discount than the authorized dealer who must carry a stock of these same parts, is manifestly unfair.

A good deal of this business is "water by the wheel," but when standing at the beginning of an entirely new business, I think it is time for some one to gather the manufacturers into a conference at which they can lay down rules which will protect the dealers and the distributors from a foolish give-away of profits.

I believe that ELECTRIC REFRIGERATION NEWS is in the position to do this because you are in touch with all the manufacturers, and I believe that you have the interests of the entire industry at heart.

The dealers and the distributing organizations are helpless in this because we are disorganized. The factories formulate these policies and carry them out regardless of protests from individual dealers. Once this policy of doing business is started, it is practically impossible to shut it off.

There would be just as much equipment sold at a legitimate profit as there will be sold under the cut-throat proposition. The factories will make more money for themselves by selling through their regular outlets, and the dealers and distributors will get a cut of a much-needed profit that otherwise would be donated to an industry which will be well financed and well able to pay the costs of getting into business.

I assure you that whatever efforts you make along this line will be greatly appreciated by the field, and will be in itself a real service to the industry.

JOHN H. HUNTER,
President.

Dealer Avalanche

Gibson Electric Refrigerator Corp.
Los Angeles
Aug. 23, 1932.

Editor:

In addition to a similarity in names, we have not a few thoughts in common. I enjoy reading the editorials—in fact, ALL of ELECTRIC REFRIGERATION NEWS every week.

It is natural that there would be too many dealers competing for refrigeration business at this particular stage of the game. An avalanche of radio dealers seeking to replace that old "volume" rushed into electric refrigeration. Fortunately, most of them are now rushing out again after finding that it requires real intelligent salesmanship and hard work to sell a refrigerator and the talking points do not furnish their own loudspeaker. That type of competition is destructive but it eliminates itself rapidly.

To my way of thinking there are three kinds of dealers that make the refrigeration business "tough" for the legitimate merchant. First, the "chiseler" you mention in your editorial; second, the price leader faddist who exploits low priced ($79.50 etc.) to attract trade; and third, the trader who gives away refrigeration profits to accomodate customers in other merchandise. When every distributor is rushing madly about to get new dealer outlets the net result is bound to be a heterogeneous mass of refrigeration accounts (I should say peddlers).

But I am confident that the boys are all going to break their backs at it and return to a lighter, more readily handled article with no three-year guarantee when they want to attract customers. Refrigeration will find its legitimate level very soon again.

L. E. TAUFENBACH,
Western district manager.

HOW A DEALER OPERATES

PHILADELPHIA—C. E. Longnecker, Lancaster, Pa., who consistently sells more than 20 refrigerators a month, is described as a model electric refrigeration dealer by the Klein Stove Co., Leonard distributor here.

Declaring Mr. Longnecker to be a model cooperator in carrying out factory approved sales and advertising activities, the distributor company lists his organized activities as follows:

He conducts a regular direct-by-mail campaign every month.

He uses a classified advertisement in every issue of his newspaper and does some display advertising each month.

He is using a half-showing on Lancaster billboards.

He took part in a highly successful theater sales promotion campaign.

He has Leonard displays in rented space in three principal markets of the city, with salesmen in constant attendance.

He uses Leonard window displays continuously, changing the decorations frequently and developing original ideas.

He has three women canvassers getting leads on Leonard prospects through the medium of a kitchenware survey.

He is conducting a school for retail salesmen.

BECKMAN NAMED EDITOR OF CLUB MAGAZINE

DETROIT—James W. Beckman, publicity man for Copeland Products, Inc., Mt. Clemens, Mich., has been appointed editor of *American Business*, national magazine of American Business Clubs, and will handle publicity for the national association. Headquarters for the club were recently moved to Detroit.

Now ... because of a revolutionary development, we offer a

*Genuine SUPER-POWERED 2 CYLINDER FRIGIDAIRE WITH 1/4 GREATER FOOD SPACE in the same sized cabinet

TO RETAIL AT . . .

$112

(PLUS FREIGHT)

DELIVERED, INSTALLED
and Federal
TAX PAID

How often have you wished for an opportunity like this! A *quality* refrigerator—*at a price;* a *genuine,* nationally known, *nationally wanted* Frigidaire—with Super-Power, fast freezing, low operating cost, one-piece porcelain interior, and other Frigidaire features *plus one-fourth more food space in the same sized cabinet!* It sells at the lowest price in Frigidaire history—and still affords you a good margin of profit! This high-grade, low-priced Frigidaire opens up a vast new market—gives you a new opportunity for volume sales and volume profits. Frigidaire Corporation, Subsidiary of General Motors Corporation, Dayton, Ohio.

*WARNING

A cheap, underpowered and poorly constructed refrigerator at any price is expensive for you to sell. Customer satisfaction—your greatest asset—is assured with this *genuine* Frigidaire. Nothing has been "cheapened"—it is the same Super-Powered, two cylinder Frigidaire made and guaranteed by Frigidaire Corporation, a subsidiary of General Motors.

Genuine FRIGIDAIRE *A GENERAL MOTORS VALUE*

Frigidaire also makes commercial equipment for Stores, Apartments, Restaurants, Hotels and Institutions . . . Water Coolers . . . Ice Cream Cabinets . . . Milk Cooling Equipment . . . Air Conditioners

LITTLE STORIES OF INTERESTING PEOPLE IN THE REFRIGERATION INDUSTRY

THE EXPANSION VALVE

LITTLE STORIES OF INTERESTING IDEAS IN THE REFRIGERATION INDUSTRY

By George F. Taubeneck

Jim Sterling Writes A Book

One hundred Norge salesmen are in town today, enjoying themselves to the limit on an entertainment diet caloried for them by Jim Sterling, Norge's active and capable sales promotion manager.

Several thousand Norge salesmen today have an opportunity to become better money-earners by reading a book Jim wrote.

When a new salesman joins the staff of a Norge dealer or distributor, he is given this book, which combines the comparatively new business of sales instruction with the age-old art of story-telling to form what is, we believe, the first fictionized sales manual in the refrigeration industry.

The title of the black-and-silver bound volume is, "A Week with Old Crombie," and it was written by Mr. Sterling not long after he became sales promotion manager of the Norge Corp., "to provide an honestly instructional manual for all Norge retail salesmen. . . in a readily readable form." We have had this volume on our desk for some time, but have never before had a decent opportunity to get in a good word for it.

In its 175 pages is the story of how 63-year-old Crombie, owner of the world's largest chain of specialty retail stores, spent a week's vacation at his Brownsville store, teaching Bob Gardner, rookie Norge refrigerator salesman, the principles of successful specialty selling, and the nature of the product he was to sell.

Old Crombie does most of the talking. Bob does all the listening. In each successive chapter, the old man gives Bob a new slant on general selling, and takes him a step further in the procedure of selling refrigerators. A dash of description or conversational banter is injected into the work now and then, to keep it from becoming tiresome.

While much of the book is, naturally, concerned with what a Norge salesman should know about the Norge, there are in it not a few terse observations on salesmanship that any refrigeration salesman might read profitably.

At th opening of Bob's week of instruction, for instance, Old Crombie remarks that "selling is a profession—differing from others only in that you can earn while you learn.' And that "selling is 90 per cent headwork and 10 per cent footwork. From the neck down, you are only worth day laborers' wages, while from the neck up, you can name your own price."

On two points, the old man speaks his mind in no uncertain terms—that salesmanship is a thing to be proud of, and that becoming a salesman isn't an overnight job.

Old Crombie supplies Bob with mechanical data of the Norge, but tells him to talk "satisfactory refrigeration," and not burden prospects with technical discussions they won't understand. And he continues that an important part of the salesman's job is that of "selling the manufacturer as well as the product."

Concerning the salesman with an everlasting alibi, Crombie has but one thing to say, and that, poetically, a la Carl Sandburg:

The Alibi Bird lives in the Land of Promise.
It flies backward and sits on the Eggs of Opportunity,
But hatches out only Hard Luck.

The salesman who never analyzes his prospects comes in for a full share of Old Crombie's fire. He tells Bob, "Unthinking salesmanship is not salesmanship. It is order-taking. And order-taking is only bringing in business that would ultimately come in, regardless of whether he is there or not. Real salesmen analyze their entire job painstakingly . . . and become real business getters. If you haven't found out what the basic reasons for buying might be, you are like a ship with its powerful engines going full blast—and without a rudder."

He urges Bob to make a daily schedule, and use the cold canvass method of getting prospects. And he warns against "class consciousness" in selling. "Every icebox owner is an electric refrigerator prospect," he says.

With winks and smiles aplenty, Old Crombie suggests some sales tricks. He says, 'When making a cold canvass, forget that you're a salesman; be a human being. One successful salesman helps his prospects dry dishes, talks at bridge luncheons, hangs out the clothes, and takes the kiddies candy."

Old Crombie believes that the best way to quote prices is on the basis of so - much - down - and - so - much - a - week, rather than in total costs. This, he says, makes the investment seem much less of a burden, and at the same time makes attractive the full price, because of the subtraction of carrying charges.

The book then lists numerous ways of selling the "can't afford it now" prospect, of selling husbands on the idea of buying electric refrigeration, and of closing any sale.

Regarding the latter point, Bob hears these words of counsel: "Produce the contract as early in the closure attempt as possible. Use it as something to illustrate a point with. Don't ask the prospect to 'sign' his name. That sounds too binding. Say 'write.' Word all your questions so that it is easier to say 'yes' than 'no.' It is much better to present the contract too early than to talk on beyond the selling point."

Closing the book is a chapter given over to Old Crombie's last tips to his protege. Sales Manager-Author Sterling has called them "Old Crombie's Don'ts." They are worth reading, and here they are:

"Don't be loud spoken; talk low and make the prospect concentrate on what you're saying. Don't talk to prospects when they're apt to be interrupted. Don't let your prospects stand as you sit. Don't talk too much Norge; other conversation helps immensely. Don't talk too much about anything; be a good listener at times. Don't knock your employer.

"Don't argue with a prospect; to win an argument is usually to lose the sale. Don't contradict a prospect. Don't stress the price of Norge. Don't knock any other make of refrigerator. Don't smoke unless invited to. Don't let your prospect put you off. Don't loaf on rainy days. Don't overlook the value of knowing what's happening in the industry; read refrigeration papers.

"Don't make any statement you aren't positive of. Don't frown; smile. Don't forget the law of averages; there are more orders in a large number of fair prospects than in a very few good prospects. Don't forget that enthusiasm is the motive power of selling. Don't be careless in dress. Don't interrupt a prospect when he begins asking questions. Don't be slangy. Don't worry about competition."

* * *

Dumping Starts

Dumping has apparently started.

The Illinois Moulding Co., Chicago, manufacturer of King Kold electric refrigerators, has thrown wide the doors of its factory sales room, and is selling new 5-cu. ft. King Kolds for $55, and 7-cu. ft. models for $89.

Chicagoans have been notified of the price-slashing event through advertisements in the *Chicago Herald and Examiner* and the *Chicago News* which state that each King Kold sold carries a three-year guarantee by the manufacturer, that the sale is being held merely to dispose of surplus stock, that the company is not going out of business, and that visitors will find the showroom open on weeks days, evenings and Sundays.

The guarantee given by the manufacturer with each unit states:

"We warrant each new King Kold Electric Refrigerator or any Electric Refrigerator manufactured by us to be free from defects in material or workmanship under normal use and service, our obligation under this warranty being limited to exchanging a new part or parts at our factory for any part or parts which proves thus defective within three years from date of delivery to the original purchaser of the refrigerator and which our examination shall disclose to our satisfaction to be thus defective; this warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on our part, and we neither assume nor authorize any other person to assume for us other liabilities in connection with the sale of our refrigerators. This warranty applies to the mechanical unit only and will not apply to any refrigerator which has been subject to accident, abuse or misuse."

A copy of one of the advertisements was sent to the Valve by Henry G. McComb of Chicago, formerly with Majestic and Servel. And one electric refrigeration executive sent us not only another copy of the ad, but enclosed with it a letter from A. B. Olsen of the *Chicago Tribune* national advertising department, which had things to say about the *Herex* and *News* advertisements.

Phil Redeker, who was news-gathering in Chicago for three weeks in August, tells us that the Illinois Moulding Co. factory showroom has been open nights and Sundays, and drawing large crowds.

Aw, Now, Mr. Captain . . .

We'll bet what Skipper Nelson of the SS President Pierce has just said has nothing to do with the advantages of electric refrigeration. The scene is aboard the ship which is carrying the 2,250,000th Frigidaire.

Birth of Copeland Room Coolers

President Louis Ruthenburg of Copeland, who is also perennial chairman of the N.E.M.A. refrigeration division, dropped into our offices the other day to discuss shoes and ships and sealing wax, and cabbages and kings.

During the course of this variegated conversation, we heard the story about the origin of Copeland room coolers. It's a dandy.

Several years ago Copeland commercial engineers were faced with the problem of making an installation in a walk-in cooler of odd design. Forced draft circulation seemed to be indicated.

At the factory a forced draft unit was designed and made, and for a time Copeland engineers were quite enthusiastic about it. (Later they discovered it dried up meats.)

A "wild-eyed salesman" got the idea that this forced draft unit would help cool a restaurant.

If ordinary electric fans would improve comfort conditions, would not a fan blowing air across refrigerated coils be much better?

He not only sold himself on the idea, but convinced a restaurant owner, too.

He got the order. Too late, the factory tried to stop him. Both he and Copeland would be a laughing stock, they told him. Air conditioning required large and complicated apparatus. These forced draft refrigerating systems for walk-in coolers couldn't begin to do an air-conditioning job.

But the salesman was up to his ears in that sale. He was in so far that a lawsuit was threatened if the sale were not completed. So with apprehension and misgivings, the forced draft coolers were installed.

Still skittish, factory representatives dropped into the restaurant now and then, hoping and praying that the wrath of the "duped" owner would not rise to a high pitch and reverberate among the marts of trade.

To their unceasing astonishment, the restaurant keeper became more and more enthusiastic. His business was increasing. His patrons were smiling more and complaining about food and service less. Waiters were getting larger tips. Profits were zooming. Copeland was his benefactor. Wouldn't the gentlemen have something on the house?

As a result of this experience, Copeland executives decided there was a definite market for room-cooling devices of this nature, and decided to go into the business.

* * *

Mr. Ruthenburg on Specialty Selling

Mr. Ruthenburg isn't joining in the general scramble to get department store outlets these days. To be sure, the "right kind" of department store might get a courteous hearing should it want to stock some Copeland refrigerators. But Mr. Ruthenburg isn't convinced that the day of specialty selling is over.

When the final returns are in, he believes, many sales managers who have hailed the department store as the solution to their distribution problems will find that the figures do not substantiate their theories.

If a department store hires outside salesmen and does a real job of selling refrigerators, Mr. Ruthenburg points out, it then generally becomes necessary to increase its discount.

In spite of the yowls which rise occasionally anent the annoyance of doorbell ringers, the American public likes to be sold by house-to-house specialty methods, Mr. Ruthenburg opines.

In substantiation, he cites the experience of large mail order firms, which formerly sold only by catalog. Good roads helped dry up the direct mail-order market, so firms like Montgomery Ward and Sears, Roebuck began to install chain department stores all over the country as outlets for their goods. And now, declares Mr. Ruthenburg, mail order house branch stores are hiring outside salesmen—thus completing the cycle!

* * *

Department Stores

For further information on the department store situation, we commend to your attention the editorial on page 6 of this issue, which is the result of long study and investigation, and which presents some "inside dope" which we think has never before been made public.

After writing this editorial, the Valve's attention was called to the September *Survey of Current Business*, published by the U. S. Department of Commerce, which states:

"Department store sales in July receded to the lowest point reported in several years. The decline, which was greatly in excess of the usual seasonal contraction, caused the adjusted index to fall 6 per cent below the level of June. Compared with July, 1931, the adjusted sales figures show a loss of 26 per cent."

All of which means that department store executives should be more tractable and less independent these days. Now may be the time to strike, for the irons seem to be getting hotter.

* * *

New York to Evansville

A short time ago we dropped into the offices of Servel, Inc., at 51 E. 42nd St., New York City. In case you've never got it straightened out, Servel, Inc., is the parent company of Servel Sales, Inc., and Electrolux Refrigerator Sales, Inc.

Servel Hermetic electric refrigerators, Servel commercial refrigerating machines, Electrolux gas refrigerators, Hercules truck bodies, and Hercules gas engines are all made at the Servel, Inc., plant in Evansville, Ind.

In addition to production executives, at Evansville you will find C. A. Miller, sales manager, and W. Paul Jones, advertising and sales promotion manager, of Servel Sales Inc., about whom you will read on the second "Expansion Valve" page of this issue (page 10). You will also find Vernon Springford, head-man-without-title; F. P. Nehrbas, vice president and general manager of Servel, Inc.; Hank Boyle, Electrolux sales promotion manager; and Bill Rorison, who edits the Servel and Electrolux house organs.

In the New York City offices work H. H. Springford, chairman of the board of Servel, Inc.; Col. Frank E. Smith, president of Servel, Inc.; F. E. Sellman, vice president in charge of sales for both Servel Sales, Inc., and Electrolux Refrigerator Sales, Inc.; E. T. Williams, consulting engineer of Servel, Inc.; and Bill Reynolds, advertising manager of Electrolux Refrigerator Sales, Inc.

Abovementioned men are by no means stationary, however. At any given time one is likely to find one or all the Evansville men in New York, or vice versa.

It's all somewhat complicated, until you get onto the hang of it.

Springford, Sellman, Reynolds

On the particular afternoon mentioned above, we were fortunate enough to find Messrs. Springford, Sellman and Reynolds all in their offices. Col Smith was in Chicago.

These three gentlemen are always interesting. They are keen students of the refrigeration situation, and usually have some ideas.

Mr. Springford thinks, for instance, that a new scheme of distribution must be worked out. Mr. Sellman concurs with this.

They point out that the three types of distribution now in effect are attempting to maintain too many dealers, that sales costs are high, and that present methods allow for chiseling—the favorite sport of 1932—loading of dealers, and eventual dumping.

(Examples of the three kinds of distribution: General Electric — specialty distributors and master retail systems in metropolitan areas; Norge—jobbing house distributors and extensive retail distribution through furniture, hardware, radio, and other types of merchants; Domestic Industries — direct sales to large retail outlets, such as department and furniture stores.)

Mr. Springford is proud of the work Servel commercial salesmen have done in New York City this year. Commercial refrigeration, he believes, is going to be an excellent business.

Recent rises in stock market quotations are helping loosen the tight credit situation among utility holding companies, states Mr. Sellman, and already the refrigeration industry has been helped, he believes.

Utility holding companies have been calling on their properties for cash, which has been limiting the merchandising operations of the properties. They can't invest so much in stocks and displays of refrigerators, and have been buying hand-to-mouth. Now, however, the situation seems better.

Keen, aggressive Bill Reynolds avers that there is considerable truth in our editorial, "Fly-by-Nights" in the Aug. 17 issue of the NEWS.

The point that the new manufacturers who have become real factors in the business are nearly all substantial concerns is well taken, he thinks.

Representatives of older manufacturers who have confidently been expecting and predicting the early demise of most of the 1932 crop of refrigerator manufacturers may have to revise their prognostications, and reconcile themselves to the fact of an enlarged industry. And again, they may not.

* * *

Electrolux Grows

Especially interesting was what these men had to say about Electrolux. Inasmuch as Faraday, the General Motors gas refrigerator, has not yet really got started, Electrolux is the only gas-operated absorption unit which is offering the electric refrigeration industry any competition.

Electrolux refrigerators are sold entirely through gas utility companies. Last year the Electrolux production was said to be approximately one tenth of the Nema total.

This year, we hear, its percentage of the Nema total is somewhat higher. Electrolux shipments for the first six months of 1932 were 112 per cent of shipments during the first half of 1931.

Up until this year, practically all of the Electrolux volume was being sold in New York City by the Consolidated Gas Co. This year the situation is somewhat different, with some 1,100 outlets in the picture.

On the Electrolux roster are about 30 gas utilities which are doing a business equivalent to that of the average electric refrigerator distributor.

Some of these utilities, which had the Electrolux franchise last year, are 400 to 500 per cent ahead of last year's sales. Atlantic City (N. J.) Gas Co. is about 1,200 per cent ahead of its 1931 halfway mark.

While the fact that only gas utility companies are able to handle Electrolux sales may seem to be a handicap, it is also a blessing.

Electrolux doesn't need to worry about chiseling or competition from manufacturers of inferior merchandise. No utility can afford to put cheap goods on its lines.

Moreover, it is a gilt-edge business. Electrolux has never lost a dollar on bad debts from these utilities. As Bill Reynolds puts it:

"It's like doing all your business with the government."

(Concluded on Page 10, Column 1)

ENGLAND AND FRANCE OFFER BEST MARKETS

By Phil B. Redeker

DETROIT—England and France present the best markets for American-made refrigeration among European countries, with England and Sweden offering the most competition from home-made refrigeration products, states E. H. Wilcox, export manager of the Kelvinator Corp. who has just returned from an extended tour of Europe.

Belgium ranks very close to England and France as a good market for refrigeration products, Mr. Wilcox pointed out.

An "increased consciousness" of advanced refrigeration facilities on the part of the European populace, in contrast to the backwardness in this subject which he noted during his previous visit six years ago, was reported by Mr. Wilcox.

London Department Stores

Some of London's most prominent department stores, which only displayed a small line of ice boxes at the time of his last visit, now have extensive displays of electric refrigerators, with home economics directors in attendance. Refrigerators also have an important place in the advertising and publicity put out by these stores, he states.

France, because of its sound financial status, and the activity of the middle-class French housewife in the kitchen, is providing an ever-increasing potential market for domestic refrigerators, says Wilcox.

The increasing cost of servant help, plus the reduced incomes caused by worldwide economic conditions, has brought about increased interest in labor-saving kitchen devices among women of the higher classes, with a resulting increase in the use of electrical appliances.

Renovated Kitchens

A number of firms in France are making a successful business venture out of the practice of renovating kitchens, Mr. Wilcox states.

The tendency of the English home owner to better his living conditions and his home has built an increasing market for refrigeration in the British Isles, the Kelvinator export manager says. The British butcher trade, an exceptionally high-class group of merchants, has taken rapidly to the possibilities of refrigeration as a means of cutting shrinkage losses and improving the efficiency of their markets, and they in turn have done much to educate the general public to the advances in refrigeration.

The commercial market in European countries has been easier to sell principally because the commercial prospect is less difficult to approach, he states.

The doorbell-ringing type of canvass as practiced by American domestic refrigeration salesmen is out of the question in most European countries, principally because the average European looks upon such methods with disfavor. In the type of home which can afford refrigeration the canvasser would be confronted by a servant, and would get no farther, Wilcox says.

European salesmen make their contacts on a "social" basis, or else approach the owner of the home at his business address, to present their sales argument as a business interview.

The manner of selling commercial and domestic machines is thus very similar, and as the commercial market offers greater profit per unit sale, it has naturally been plied more by salesmen.

As European distributors have been unable to apply American sales methods, neither have European manufacturers been able to apply American manufacturing methods in the construction of refrigerators, with the result that there is a high degree of turnover of manufacturers in the refrigeration field.

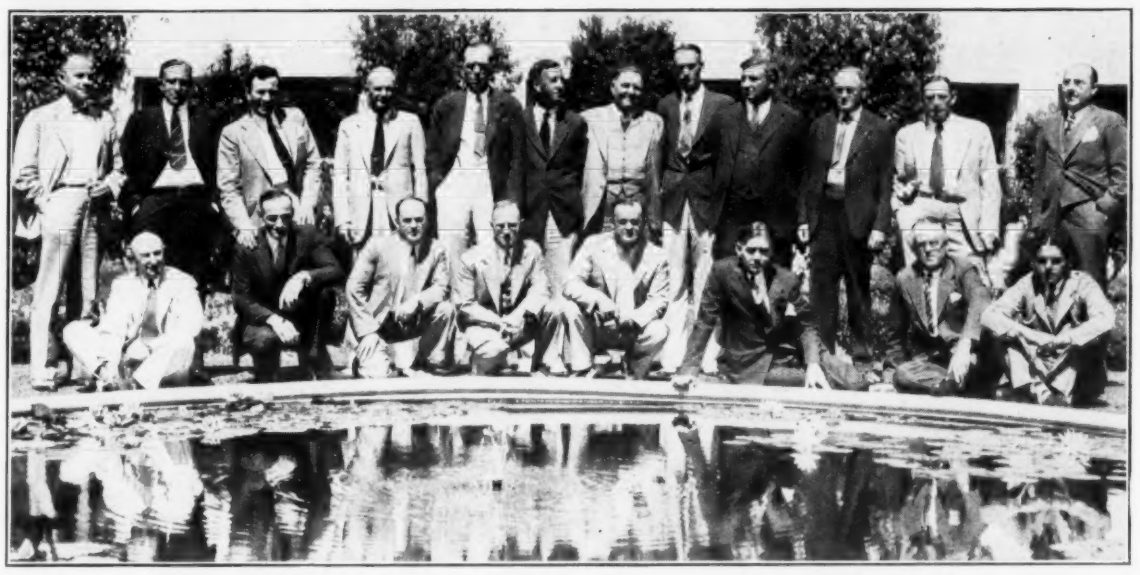
"Snow-White" Enameled Refrigerator Cabinets

Thoroughly and efficiently insulated, rigid in construction and beautiful in appearance. Prompt delivery in standard models and sizes of 4, 5, 6 and 7 feet, for both upper or lower unit mounting. Chromium finished hardware of artistic design. Equipped to produce special models at lowest prices when quantity is attractive.

Inquiries are solicited
Estimates on request

TRUSCON STEEL COMPANY
Pressed Steel Division
6200 Truscon Ave., Cleveland, Ohio

Pacific Coast Majestic Convention



Majestic dealers on the Pacific Coast recently held a two-day sales conference at Del Monte, Calif. Don M. Compton, general manager, and John Ditzell, refrigeration sales manager, attended.

95 LEONARD DEALERS ARE NAMED BY DISTRIBUTORS

DETROIT—The appointment of 95 dealers, representing 32 states and one territory, has just been announced by the Leonard Refrigerator Co., Detroit and Grand Rapids, Mich.

The new dealers are as follows: Kennedy Hardware Co., Anchorage, Alaska; Priser Typewriter & Office Supply Co., Tuscon, Ariz.; Fred Snodgrass, Oxnard and Ventura, Calif.; George Miller, Clovis, Calif.; Gibson's Tire Shop, San Mateo, Calif.; Scantland Bros., Los Angeles; Lewis Paint & Hardware Co., Glendale, Calif.

Gibler Machine Shop, De Beque, Colo.; C. L. Luther, Haswell, Colo.; Syndicate Mining & Milling Co., Rico, Colo.; Sheraf's Furniture Co., New London, Conn.; C. W. Scott, Stores Co., Idaho Falls, Idaho; Glaser Radio Shop, Chicago.

H. P. Kieskowski, Harvard, Ill.; Fred Ferris, Woodstock, Ill.; Marshall Field & Co., Chicago; White Furniture Co., Indianapolis; Finke Furniture Co., Evansville, Ind.; Wetzel Radio Shop, Clifford, Ind.

F. A. Cassotti, Fraser, Iowa; Bauman & Montag, West Bend, Iowa; McNamara Furniture Co., Iowa City, Iowa; Nissen & Nissen, Reinbeck, Iowa; J. O. Weber, Olathe, Kan.; H. M. Anderson, Gardner, Kan.; Noah Martin, Minnie, Ky.

Philip Werlein, Ltd., New Orleans; W. A. Kennedy, Rayne, La.; Paramount Electric Construction Co., Houma, La.; Dean & Foster, Bel Air, Md.; Schofield Hardware Co., North Attleboro, Mass.; Hill Hardware Co., Cambridge, Mass.; P. F. Carey Co., South Boston, Mass.

E. C. Stiegler & Co., Lawrence, Mass.; H. L. Stedman, and Beale & Robinson, both of Brockton, Mass.; J. H. Alger & Son, Clarkston, Mich.; James G. Du Bois, Vassar, Mich.; E. B. Glason & Son, Midland, Mich.; Wagner Sales & Service, Richmond, Mich.

Minges Furniture Co., Maplewood, Mo.; Easy Housekeeping Shop, Roundup, Mont.; M. R. Hogue, Imperial, Neb.; Pauley-Davis Co., Reynolds, Neb.; Nash Radio Exchange, Somersworth, N. H.; A. H. Britton & Co., Concord, N. H.; Charles H. Austin, Inc., Nashua, N. H.

Leo Radio Shop, Camden, N. J.; Electric Economics Co., Buffalo; G. E. Scott, Canton, N. Y.; Cooney-Watts & Cooney, Geneva, N. Y.; Wall Street Garage, Addison, N. Y.; B. F. Wheeler, Round Lake, N. Y.; L. R. Drumm, Stuyevesant Falls, N. Y.; E. R. Burden, Sodus, N. Y.

Sulphur Hardware Co., J. O. Carter Sheet Metal Co., and Helen H. Slover, all of Sulphur, Okla.; Davis Electric Co. and Rector's Hardware Co., both of El Reno, Okla.; Massey Drug Co., Granite, Okla.; Dr. E. F. Hurlburt, Meeker, Okla.; Hartan Motor Co., Davis, Okla.; Warren Hardware Co., Maud, Okla.; C. P. Harris, Norman, Okla.; Standard Furniture Co., Tulsa, Okla.; Plock Furniture Co., Eufala, Okla.; Chestnut's Music Store, Oklahoma City; J. W. Owsley, Chichasha, Okla.

F. H. Rayl and Broadway Electric Co., Portland, Ore.; I. G. Phillippy, Johnstown, Pa.; John W. Sterling, Linglestown, Pa.; Will T. Eager, Strasburg, Pa.; Adler Hardware Co. and A. B. Baxter, both of Providence, R. I.

K. Rawlings & Co., Sevierville, Tenn.; Shuck Motor Co., Newbern, Tenn.; Thaxton Bros., Burkburnett and Henrietta, and McMurray Plumbing Co., Alpine, Tex.; Pehrson Electric Co., Logan, Utah; Radio Studios, Inc., Salt Lake City, Utah.

W. H. Cass, Hardwick, Vt.; B. C. Hawley, Jeffersonville, Vt.; True & Blanchard Co., Newport, Vt.; W. E. Nims, Bothell, Wash.; Lincoln Radio Nook, Tacoma, Wash.; Van's Radio Service, Kirkland, Wash.; United Furniture Co., and Mast Radio Co., both of Seattle.

Hamlin Drug Co., Hamlin, W. Va.; F. W. Lueloff, Colby, Wis.; W. D. Wheeler, Evanston, Wyo.; and Rock Springs Electric Co., Rock Springs, Wyo.

Trade Executives To View Statistics

NEW YORK CITY—Exhibits of statistical material correlated by American trade associations and placed monthly at the disposal of their membership will be a feature of the thirteenth annual convention of the American Trade Association Executives which will be held at the Hotel Ambassador, Atlantic City, N. J., Sept. 14 to Sept. 17, according to W. J. Donald, chairman of the convention and program committee.

Association publications, communications, documents, photographic and other pictorial material, together with charts and graphs will illustrate the research work of the trade associations in this country in the fields of fundamental economics, market studies, statistics and trade promotion.

Other displays will deal with management problems, new activities, membership maintenance and promotion, internal organization and miscellaneous association activities.

One division of displays, titled, "Before and After—1929:1932," will show the association activities which, although retained, have undergone important modifications within the last three years; and it will show in contrast the original activities counter-posed to the modified activities—with a statement in each case of the cause of the modification.

Another display will be devoted to the work of trade associations in dealing with unfair trade practices. Exhibits in this division will reveal the research, education, informatory or regulatory activities that pertain to unfair trade practices within a common field.

A special display will be comprised of material demonstrating the facilities and information of the Federal government, of the Chamber of Commerce of the United States and of the varied helpful professional bodies that are placed at the disposal of executives.

These exhibits will be arranged and supervised by the following exhibit committee: Robert Everett, Dairy and Ice Cream Machinery and Supplies Association, New York City, chairman; Wainwright Davis, National Converters Institute, Chicago; G. K. Dahl, World Convention Dates, New York City; Philip P. Gott, Chamber of Commerce of the United States, Washington, D. C.; Howard P. Beckett, National Paper Box Manufacturers Association, Philadelphia.

On the first day of the convention, Sept. 14, Dr. Stephen I. Miller, director of economics, R. G. Dun & Co., will speak on "Trends and Changes in Economic and Political Thought—How They Will Affect the Trade Associations—Through Legislation or Otherwise." E. P. Chalfant, secretary-treasurer, American Trade Association Executives, will talk on "What A.T.A.E. Means to Its Members and the Trade Association Movement."

"New Emphasis in Trade Association Cost Accounting Activities," will be the subject of an address by T. W. Howard, director of uniform accounting, National Electrical Manufacturers Association, the following day, Sept. 15.

"Trade Statistics — What — How—Why," will be discussed by Wilson Compton, secretary-manager, National Lumber Manufacturers Association, and "Financial and Credit Activities of Trade Associations," will be the subject of a speech by Philip Gott, manager of Trade Association department, Chamber of Commerce of the United States, on the same day.

Sept. 16, North Storms, secretary, Mirror Manufacturers Association, Jos. C. Fitts, secretary, Heating and Piping Contractors National Association, H. Foster Bain, managing director, Copper Brass Research Association, John Devigny, secretary, United Typothatac of America, F. E. Wormser, secretary, Lead Industries Association, Rand McCann, director, American Dry Milk Institute, C. B. Huntress, secretary, National Coal Association, will give a "Symposium on New Trade Association Activities."

Conferences will be held the same day, the leaders being: H. C. Buckelew, secretary, New Jersey Laundry Owners' Association; C. B. LePage, assistant secretary, American Society of Mechanical Engineers; R. Macfee, secretary, Central Supply Association; Herman Fakler, Washington representative, Miller's National Federation.

Sept. 17, Dr. A. P. Haake, managing director, National Association of Furniture Manufacturers, will speak on "Membership Maintenance and Promotion."

'YOU BET YOUR LIFE' THEME OF G. E. FILM

CLEVELAND, O.—"You Bet Your Life" is the title of the latest film developed for use with the "brooder" camera used by General Electric salesmen.

The significance of the title is explained by the film which shows that a prospect "bets his life" if he purchases inadequate or cheap refrigeration equipment likely to give poor performance.

Two million people in the United States are confined to their homes every day because of illness, and the majority of these cases are caused in one way or another by the consumption of food, the film points out. Improper preservation of food is a leading cause of sicknesses incurred from eating certain kinds of foods, according to the film.

A General Electric refrigerator can be purchased at a cost of 5 cents per day, the film shows. An actual outlay of 33 cents is required, but by figuring in a saving of 20 per cent through elimination of spoilage and quantity buying on a family food bill of $120 a month, and a saving on left-overs of 5 cents a meal, a total savings of 28 cents a day is realized, making the actual cost of purchase but 5 cents a day.

The film also points to the mechanical features of the General Electric line, including the hermetically-sealed mechanism, all-steel construction, finger-tip control, small-size single motor, and other major sales points.

MEAD JOINS TAYLOR FREEZER AS DISTRICT MANAGER

BELOIT, Wis.—Frank H. Mead has recently been named a district sales representative for the Taylor Freezer Corp., manufacturer of unit ice cream freezers.

G. M. DWELLEY

WANTS 7 MEN!

I want the seven best wholesale road men available in the refrigeration industry—experienced producers to work with me on the

JEWETT REFRIGERATOR

I am looking for seven men with very definite qualifications and abilities, because the opportunity itself is very unusual.

- The men I want must have had a lot of successful experience in wholesale selling of electric refrigerators and in the appointment and direction of distributors and dealers. It is desirable, although not essential, that they shall have had successful experience as retail sales managers.
- Their records must be as clean as a hound's tooth—both in the refrigeration industry and in previous business connections. Their references must be strong—their character above reproach.
- They must know some part of this country well, and be well and favorably known by refrigeration dealers and salesmen in that territory.
- Above all, they must be *producers*, with provable records of achievement, who have demonstrated their ability to make and save money.

Age makes no difference. Health, ability to work hard, willingness to take direction—these are important. The selling plan is unique in the industry! The product is at the top—the price at the bottom! The program offers assured, immediate success, with 1929 earnings in 1932!

Your letter will be held in strict confidence. Tell me all about yourself—your money needs—the territory you know and like best—your experience and sales record. Say it all in one letter and mail it today!

G. M. Dwelley, *Sales Manager*
JEWETT REFRIGERATOR CO.
2 Letchworth St. Buffalo, N.Y.

LITTLE STORIES OF INTERESTING PEOPLE IN THE REFRIGERATION INDUSTRY

THE EXPANSION VALVE

LITTLE STORIES OF INTERESTING IDEAS IN THE REFRIGERATION INDUSTRY

By George F. Taubeneck

(Concluded from Page 8, Column 5)

Col. Smith Thinks Hard

A few days after the conversation which produced the information which concluded page 8, Col. Smith returned to New York, and we had quite a visit with him.

The colonel, it seems to us, has never been so active mentally as he is today. One can almost see the wheels in his mind turn. He, too, thinks it's time for a change in distribution methods, and is actively working up a plan and a system.

He is also highly interested in seeing to it that Servel inventories are low. There's a great deal of merchandise in the field right now, he points out, and only the most strenuous efforts will prevent dumping.

Two big jobs are immediately ahead of the industry, he believes: (1) Get together. (2) Hold the fort.

* * *

Stocks, Stocks, Who Has the Field Stocks?

One of the things which evokes pride in Col. Smith is the condition of Servel inventories. He claims that Servel and Electrolux factory and field stocks are so low they are practically negligible.

The same statement has been made to the Valve by several other electric refrigeration executives during the last two months. Yet each is worried because apparently other manufacturers have heavy stocks in the field.

Almost every executive feels that his last-quarter sales may be handicapped by dumping of other manufacturers' products.

It has been officially estimated that 194,167 units were in the hands of distributors and branches of Nema members at the end of July.

This number does not include units now possessed by dealers, or on consignment. It also does not include stocks in the hands of distributors and dealers of non-Nema manufacturers.

And even though Glen Muffly, refrigeration statistician of the N. E. M. A., declares that field stocks are not excessive, a number of manufacturers seem apprehensive.

* * *

Tips for Salesmen from Paul Jones

Several executives in responsible positions with electric refrigeration manufacturers have formerly been distributors.

Jim Sterling, ideacious Norge sales promotion manager, used to have charge of the distribution of Maytags down in Florida.

John Ditzell, saviorfaireous Majestic sales manager, was once an Electrolux distributor.

And W. Paul Jones—the subject of these next few paragraphs—was a Frigidaire distributor in Evansville before taking over his present job, advertising and sales promotion manager for Servel Sales, Inc.

In addition to the customary sales promotional duties of preparing direct mail literature, getting out a house organ ("Servel Refrigograms"), supervising the preparation of national and local advertising copy, taking care of publicity matters, and being something of an official greeter, Paul does a lot of traveling and conferring with distributors.

He can understand distributors' problems, and can advise and consult with them in their puzzlement, for he was once a successful distributor of electric refrigerators himself.

Below we are printing some of his tips for salesmen. They are, we should judge, fundamentals:

Let prospect talk; but not too much.

Don't encourage conversation that is off the subject of your sales call. If the prospect starts talking about something side from the purchase of refrigeration, let him talk until he gets into generalities, then switch him back to refrigeration. Your time is money, no matter how he figures his.

Don't make claims that can't be proved.

A prospect should never be allowed to doubt your statements. If he expresses doubt, no stone should be left unturned to overcome the doubt. This means that the salesman should be careful to confine himself to the truth and to make only those claims that he can back up with proof.

Mental attitude reflects in face and voice.

The salesman who is afraid he cannot close a prospect shows it in his face and in the tone of his voice. The salesman who is confident of success radiates that confidence.

Smiles will not sell electric refrigeration.

Business isn't vaudeville. The salesman who depends too much on smiles to get his prospects to buy electric refrigeration will not get very far. His personality must be backed by a knowledge of his product that convinces the prospect that he has something the prospect cannot afford to do without.

Personality, however, as expressed in the face and voice, is important.

Be polite when answering the telephone.

When the telephone rings at the store, the person who answers the call should be courteous from the first word he utters.

The "voice with a smile" can really do what it is supposed to do, if only given a chance. A polite "good morning" requires but a moment, but it is a moment well spent. After that—business.

Don't be fooled by a good listener.

The mere fact that a prospect lets the salesman talk has nothing to do with selling him. He may be polite enough to listen, but his mind may be wandering to other things. The wise salesman will observe his reactions and guide his interview to be certain of interest.

Analyze work at end of each week.

At the end of each week it is a good plan to go back over the week's work and analyze in detail what you have done, including both your successful sales and those you lost. Ask yourself whether you are entirely satisfied with your work. It is only through such a process that you can steadily improve yourself and increase your success as a salesman.

Know your sales presentation thoroughly.

Know your sales presentation story so well that you can talk in a natural and sincere tone when conducting an interview. This will require study, but the man who is willing to spend some time familiarizing himself with every phase of the presentation story will get more sales this year.

Keep your sales kit neat and clean.

The contents of a salesman's kit should always be neat and clean in appearance. Commercial advertising literature, sales manual, data book and other sales aids should not be rumpled, dirty or worn, but should be replaced immediately at the first indication that their appearance might be repulsive to the prospect.

Make use of all advertising helps.

Every sales outfit should be complete. Every advertising piece available should be included in the kit when calling on a new commercial prospect. Salesmen will have far better results if they give careful attention to their supply of selling materials.

The more you know about your prospects and their problems, the more successful you will be in closing sales. Show an interest in them, and they will usually show an interest in what you have to say.

While you're listening to them talk, many important bits of information may be obtained that can later be used in guiding your sales presentation.

Get on the job as early as possible each day, and spend every moment of it profitably. Think what you are going to do, and don't lose sight of a plan or definite program for each day.

Have your prospect cards for the day all routed before you start out. A few moments spent routing cards the night before will save time in the morning.

Impress every prospect with the importance of the information presented in your sales demonstration. Never hurry the interview, nor allow yourself to be hurried.

If you discover that you are being hurried through what you have to say, then there's usually something wrong with the presentation. You've lost control of the prospect's interest.

Sayre Checks the Returns

With the 1932 Kelvinator Derby finished, J. S. Sayre, sales manager, checks the final returns before announcing the purse winners.

Not Gar Wood

But it is Charles Gibson, president of Gibson, piloting his outboard with a surf-board rider on behind.

George Brown Wonders

Will the Electric Refrigeration Bureau be in existence next year? In New York City the other day George Brown, capable, heart-and-soul manager of the bureau, told us that he is wondering about that. There seems to be some hesitancy on the part of some manufacturers to kick in with appropriations for the 1933 Bureau budget.

George feels that manufacturers are just now getting into position to realize the full benefits of their past investments in the Bureau. It seems to be all set to function, and this year for the first time has been showing the tangible results of organization, preparation and execution. Sounds reasonable to us.

* * *

Beautiful Daughters

Several days ago Sid Egan, of Maxon, Inc., advertising agency which has the account for G. E. refrigerators and Hotpoint ranges, showed us a corking good set of pictures of a stunning 16-year-old daughter. To look at Sid, you would guess that his eldest was probably getting ready for kindergarten.

Those pictures gave us an idea. It wasn't so long ago that we published pictures of Marjorie Crampton, beautiful daughter of B. R. Crampton, president of Winters & Crampton. Marjorie was queen of the Michigan Cherry Festival.

Other handsome daughters of industry executives whose pictures we have printed recently include Lorna Blood, daughter of President Howard E. Blood of Norge, and Lou Wolf, daughter of Frank Wolf, G. E. distributor in Buffalo.

If any other readers of this kolyum have pretty daughters, we'll be glad to receive pictures of them. There's nothing like feminine pulchritude to hold reader interest, and we have a hunch that there are some peaches to be found in the families of refrigeration men.

* * *

Tall Tales Dept.

Park Manross, assistant general manager of Kelvinator of Canada, London, Ont., recently sent to the Kelvinator factory in Detroit a picture of himself, taken after what appears to have been a successful fishing trip. For he is shown with his arms wrapped tightly about a fish that is several inches longer than Fisherman Manross is tall.

And with the picture came a letter which we believe merits publication in our Tall Tales Department. This is what the Kelvinator man's letter said:

"The photograph shows one of our Canadian brook trout. I know you have many Izaak Waltons in your establishment who are fly-casters, but this is the way you catch *these* brook trout. Instead of using the ordinary little trout-flies for trout of this size, we use 1½-inch rope and, for casting, use 22-pound turkeys. Working on the group-bonus system it takes four men 48 hours to land one of these and requires six WRD-150's with 12 triple coils to refrigerate the boat pilot sufficiently during the process so that he does not lose his head.

"We scale them with a team of horses and an ordinary mowing machine, load them on flat cars and ship them to the sawmill to be sliced. The insides and trimmings are sent to Jack Miner to feed his 3,996 sea gulls, and the teeth and eyes are shipped to our Agricultural College to build rock gardens."

* * *

Raid Protection

From Schenectady, home of the General Electric Co., come hints of a device which will protect well-filled refrigerators from the raids of hungry husbands who invade the kitchen for a midnight snack, against wifely orders.

By means of the new device, an infrared, or "invisible light" beam plays across the door of the refrigerator, and focuses on a photo-electric cell. The beam passes directly across the point where the snack-snitcher's hand is placed on the door handle.

The instant the hand breaks the beam, a bell rings. The device cannot be disconnected without first ringing the bell.

* * *

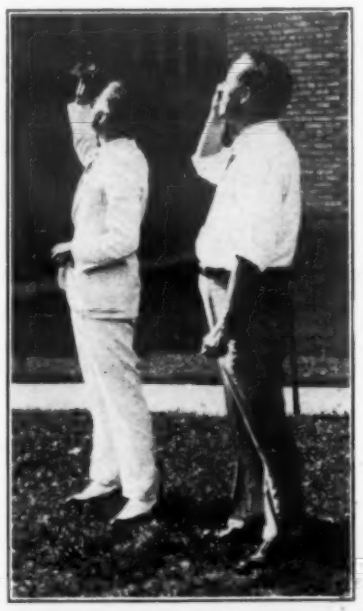
Poet's Corner

Ben Allen, southern representative for G. E. refrigerators, has composed the following pome, which we're glad to reproduce in our w.k. Industry Poet's Corner, as follows:

A salesman is a fellow with a smile upon his face.
And a word of cheery greeting as he goes from place to place.
He devotes his time and effort from an early morning start
To meeting folks and talking what is nearest to his heart.
He lives a life of service and he gains a host of friends,
For he's never actuated by base and selfish ends.
Each day he calls on people with the only thought in mind
Of the good that he is doing for the prospects he can find.
He raises living standards with the things he has to show
As he calls the folks' attention to the things that they should know.
He never stoops to offer any piece of merchandise
That will not perform a service consistent with its price.
He meets his competition with a friendly kindly word,
And he never speaks with malice of the things that he has heard.
He is sure the thing he's selling brings a lasting benefit
Far greater than the profit that he makes in selling it.
He's secure in his conviction that his effort is worthwhile,
So he buckles in each morning with an everlasting smile
Bringing work to men in factories whose families depend
On the daily sales production of their genial happy friend.

* * *

Sun-Gazers



Frank S. Gibson, vice president of Gibson, and L. W. Hamper watch the eclipse on the factory grounds.

She Cools Noble

A recent issue of *The New Yorker* carries the following amusing story:

Our record of the little battles between humans and their machines has been lengthened by a little story about a refrigerator, sent us by a man who read a story we had about an electric clock.

The people who had sold the refrigerator received a call from its owner, asking them to hurry right around and make some sort of adjustment, any kind of adjustment.

The thing was, the owner reported to a service man, eating its head off. It was using enough electric current to run a machine shop.

The service man looked at the electric bills, before and after, and agreed that, indeed, something was radically wrong. He inspected the icebox carefully. Everything was fine. He went over the wiring. Nothing wrong. He went over a lot of things with no result.

Then he sat down and looked at the machine, reproachfully. While he was so engaged, the colored cook came in and he idly asked her how she liked her new refrigerator.

"I likes it fine," she assured him, "jes fine. I leaves the door open and she cools the whole kitchen noble."

* * *

Einstein Vanishes

A short time ago we cleaned house around these diggings. And in one folder of old, miscellaneous scraps we found a yellowed clipping from a newspaper. It was headed: "Einstein Turns Ice Maker; 'Smartest Man' Invents Motorless Refrigeration."

Herr Einstein is generally conceded to be one of the most learned and profound men of science the world has yet produced. It is said that only six men really understand his Theory of Relativity; and of these six, there is not one who can explain it clearly to another man.

Perhaps that was what was the trouble with Herr Einstein's electric refrigerator—nobody could understand it. We quote the clipping:

Berlin, Oct. 26.—Housewives of the world and particularly of America may be pleased to hear that the person who is sometimes called the "smartest man on earth" has gone to work for them. Albert Einstein has filed patents in Germany and the United States for electric refrigerators which will reduce the cost of these luxuries to one-fifth of their present price.

It is not generally known that the man of many and abstruse theories, of relativity, of electric and gravitation fields, and so on, is also an eminently practical mechanic whose advice has been sought for decades by inventor friends.

He had a year's experience in the patent office at Zurich and his ability to grasp at a glance a mechanical or electrical problem is said to be astounding. Many devices now in commercial use are ascribed to hints he has let drop after looking over the invention of a friend in which just one small correction was necessary to perfect it.

Until recently Prof. Einstein has not bothered to devote his energies to practical invention but last year a young Hungarian acquaintance, Dr. Szillard, interested him in the problem of electric refrigeration. Now Einstein and Szillard have taken out the basic patents which, it is said, will revolutionize the production of artificial ice in the home.

The fundamental difference between Prof. Einstein's ice-making apparatus and most of those now in use is that his works without a motor and with so simple a contrivance that the inventor is confident he may produce electric refrigerators for the cost of an ordinary ice box.

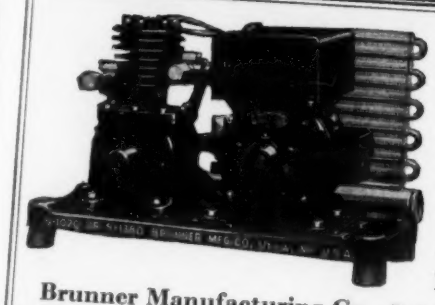
The technical details of Prof. Einstein's refrigerator will not be made public until the patents are granted, but the *Public Ledger* is in a position to give a rough sketch of its basic idea. The central point of Prof. Einstein's device is a mercury pump, which acts in the same way as the armature of a motor. Outside the mercury-filled tube are two coils through which an alternating current from ordinary light connections flows, thus making magnets of the coils.

In the oscillating field created by the magnets the mercury rotates, creating a pumping and sucking motion, which in turn creates the compression and recompression necessary for producing the ice.

BUYER'S GUIDE

Manufacturers Specializing in Service to the Refrigeration Industry

SPECIAL ADVERTISING RATE (this column only)—$12.00 per space. Payment is required monthly in advance to obtain this special low rate. Minimum Contract for this column—13 insertions in consecutive issues. All advertisements set in uniform style of type with standard border. Halftone engravings of 100-line screen, either outline or square finish. No reverse cuts or heavy black effects. No charge for composition.



Test Brunner Equipment Alongside of the Highest Priced Units on the Market

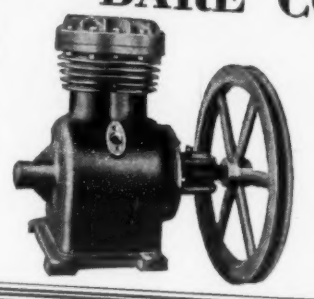
You'll find, as have other large companies, that Brunner equipment rates at the top.

BRUNNER

High Sides and Compressors

Brunner Manufacturing Co. *Refrigeration Division* Utica, N. Y.

BARE COMPRESSORS



New 1/6 H. P. Twin 1¼" x 1¼"

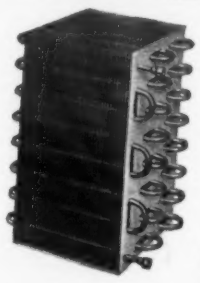
For Sulphur Dioxide or Methyl Chloride

Other Sizes 1/6 H. P. to 50 H. P.

H. C. PARKER, LTD.

2627 Santa Fe Ave. (Factory), Los Angeles, California
392 Clifton Ave., Newark, N. J.
510 Larkin St., San Francisco, Calif.
734 M. & M. Bldg., Houston, Tex.
237 Roosevelt Bldg., St. Louis, Mo.
37 W. Van Buren St., Chicago, Illinois

A NEW FIN COIL *by* PEERLESS



Wedge-locked and edge-locked aluminum fins on tinned copper tubing for methyl chloride, sulphur dioxide, F-12, etc.,—aluminum tubing for ammonia.
Absolute Metal to Metal Contact.
A Superior Coil in which Soldered Return Bends have been eliminated.
Priced to meet 1932 conditions.
Write—Wire for Catalog.

PEERLESS ICE MACHINE CO., 515 W. 35th St., Chicago, Ill.

Do You Want Information About AIR CONDITIONING?

A directory of manufacturers, descriptions of equipment, articles telling how air conditioning is being sold, articles on design, installation and application. All this—and more—in the Aug. 10, 1932, issue of ELECTRIC REFRIGERATION NEWS.

A few extra copies are available at 10c each—or you may order a 17 weeks trial subscription for $1.00 and ask that the Aug. 10 issue be included.

Electric Refrigeration News, 550 Maccabees Bldg., Detroit

COMBINATION SUBSCRIPTION RATES

How to save money on your subscription order

NO.	PUBLICATIONS	YOU PAY	YOU SAVE
1	Electric Refrigeration News (1 Year) and Refrigeration Directory and Market Data Book	$4.00	$1.00
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4	Refrigerated Food News (1 Year) and Electric Refrigeration News (1 Year)	$3.50	$ .50
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Order by number. Use coupon below. These rates for U. S. only.

Group Order Rates for U.S. and Foreign Countries

PUBLICATIONS	NUMBER	UNITED STATES*	CANADA†	ALL OTHER COUNTRIES
Electric Refrigeration News	1 subscription	$3.00	$6.00	$4.00 These foreign
	5 or more, each...	2.75	5.75	3.75 rates will
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	20 or more, each...	2.25	5.25	3.25 on or before
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Refrigerated Food News	1 subscription	$1.00	$2.00	$1.50 These foreign
	5 or more, each...	.95	1.95	1.45 rates will
	10 or more, each...	.90	1.90	1.40 be increased
	20 or more, each...	.85	1.85	1.35 on or before
	50 or more, each...	.80	1.80	1.30 Jan. 1, 1933.
BOTH PAPERS	1 subscription	$3.50	$7.00	$5.00 These foreign
	5 or more, each...	3.25	6.75	4.75 rates will
	10 or more, each...	3.00	6.50	4.50 be increased
	20 or more, each...	2.75	6.25	4.25 on or before
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*U. S. and Possessions and Pan-American Postal Union Countries.
†High rates for Canada are due to Canadian tariff of 5c per copy

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☐ Enclosed is remittance for $.....
☐ Please enter my order for COMBINATION OFFER NO.....at $.....
☐ Enter subscription to Electric Refrigeration News ☐ 1 Year $3.00. ☐ 2 Years $5.00.
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☐ Send 1932 Refrigeration Directory and Market Data Book. $2.00 per copy.

Name .....
Address .....
City ..... State.....

9-7-32

REQUESTS FOR INFORMATION

Please refer to the 1932 Refrigeration Directory and Market Data Book for a complete list of all manufacturers of refrigeration equipment, parts, materials, supplies and accessories; also for all available statistical data on sales of refrigeration equipment, distribution methods, etc.

To obtain a copy of this book send $2.00 to Business News Pub. Co., 550 Maccabees Bldg., Detroit, Mich.

Advertisers will be given preference in published answers to requests for buyer's guide service, but a complete list of all known suppliers will be mailed if stamped, self-addressed envelope is enclosed with inquiry.

Readers who can be of assistance in furnishing correct answers to inquiries, or who can supply additional information, are invited to address Electric Refrigeration News, mentioning query number.

Display Case Dehumidifiers

Query No. 930 (Refrigeration manufacturer, Canada)—"As subscribers of your paper we wonder if you would put us in touch with the manufacturers of various types of chemical dehumidifiers for extracting the sealed moisture between the glass in the front of refrigerators or refrigerated display cases."

Answer—Kason Hardware Corp., 61 Navy St., Brooklyn, and Garden City Plating & Mfg. Co., 1430 S. Talman Ave., Chicago.

Milk Coolers

Query No. 931 (Refrigeration dealer, New York)—"We have been informed that there is some manufacturer making 4-can milk coolers that retail for considerably under $100. Can you give us his name?"

Answer—See 1932 REFRIGERATION DIRECTORY AND MARKET DATA BOOK.

Ice Cube Trays

Query No. 932 (Refrigeration manufacturer, Ohio)—"Will you please give us the names of manufacturers of ice cube trays for refrigerators?"

Answer—See page 238 of the REFRIGERATION DIRECTORY AND MARKET DATA BOOK.

Ice Cream Cabinets

Query No. 933 (Ice cream freezer manufacturer, Boston)—"In the 1932 DIRECTORY you give a figure of 381,238 ice cream cabinets sold to date. I assume that these are electrically refrigerated units.

"Can you tell me, or hazard an estimate, of the number of such cabinets that are out on lease and the number actually owned by the retail store?

"Also I would like the address of the manufacturer of Signal electric motors."

Answer—The DIRECTORY statistics on cabinets apply to electrically refrigerated cabinets. We have no information on the number of cabinets leased or owned. Signal Electric Mfg. Co., Menominee, Mich., manufactures Signal motors.

Kerosene Refrigeration Unit

Query No. 934 (Bottle cooler manufacturer, Ohio)—"Will you kindly advise us, if you can, the name and address of the manufacturer of the kerosene-operated refrigeration unit used in the domestic Montgomery Ward refrigerator?"

Answer—Because of the manufacturing agreement with the Montgomery Ward Co., the name of the manufacturer of this absorption unit has not been made public.

Workmen's Compensation Policies

Query No. 935 (Plumbing Co., Michigan)—"We are wondering under what classification number and rate most refrigeration service men are placed by insurance companies under their workmen's compensation policy. We would also like to know how the combination refrigeration and oil burner service men are classified and rate applicable to them."

Answer — Workmen's compensation policies differ widely in various localities. Classification No. 5190 applies to refrigeration service men and No. 5183 to oil burner service men.

Bennett Insurance agency, 1556 First National Bank, Detroit, inform us that their rate for refrigeration is $1.40 per hundred and that their oil burner rate is $1.23. In case of combination service men, the *lower* rate is applied.

A large manufacturer tells us they pay rates for refrigeration service men varying from 2.569 per hundred in New York to .825 in Chicago and .65 in Detroit.

Lists of Manufacturers

Query No. 936 (Refrigeration manufacturer, Ohio)—"Could you supply me with a list of milk cooler cabinet manufacturers, beverage cooler manufacturers and bulk ice maker manufacturers which are located east of Pittsburgh?"

Answer—See 1932 REFRIGERATION DIRECTORY AND MARKET DATA BOOK.

Calorimeter Manufacturer

Query No. 937 (Manufacturer, Mass.)—Can you advise us of any firm who manufactures a calorimeter suitable for testing the refrigeration units in household refrigerators.

Answer—No such equipment has yet been placed on the market. The manufacturers using calorimeters for capacity tests have built their own machines to suit their own requirements.

For a description of a typical calorimeter as used by a large refrigerator manufacturer, see page 8 of the Engineering section of the June 15 ELECTRIC REFRIGERATION NEWS.

FEW MANUFACTURERS WILL REPORT PROFITS

(Concluded from Page 1, Column 4)

panies have entered the electric refrigeration field in great numbers, influenced by the growth of the industry and the stability of the demand for its products, it was found by the survey.

Comparison of the number of electric refrigerators in operation, approximately 3,500,000 at the close of 1931, with the total of wired homes, more than 21,000,000, in the United States, illustrates the extent of the unexploited market still remaining to the electric refrigeration industry.

In its report of the ice business, Standard Trade and Securities states:

"While the bulk of profits for ice companies normally is obtained in the September quarter, it is probable that results in the current period will drop sharply below the levels of a year ago. In view of the nearly 50 per cent decline in net income of leading producers in the initial half of the year, the outlook for the full 12 months is definitely unsatisfactory.

"Possibly the combination of adverse circumstances now operating in this trade may become less oppressive under the more normal business conditions ultimately to be expected; nevertheless, the long-term prospects are clouded by the probability of continued inroads by mechanical refrigeration."

In its account of the Kelvinator Corp., Standard Trade and Securities states:

"Partly because of increased sales of Leonard refrigerators, unit shipments of this company in the March and June quarters were 10 per cent and 20 per cent higher, respectively, than in the corresponding 1931 periods. Nevertheless, severe competition resulted in price cuts so greatly exceeding reductions in costs that profit margins were all but eliminated.

"As the company is believed to have strengthened its position in the industry, however, any improvement in public demand for refrigerators should be accompanied by a substantial recovery of earnings. In the meantime, some benefit will be derived from the second reduction in salaries put in effect June 30, 1932, while the newly acquired Rightway Oil Burner business is expected to bolster sales during the seasonally poor winter months.

"Net income for the nine months ended June 30, 1932, was equivalent to only $0.05 a share, in contrast with $1.47 for the like period last year. As the current quarter normally yields no profit, it is unlikely that the company will do better than break even for the fiscal year ending Sept. 30, 1932. Share earnings for the previous 12 months amounted to $1.54. Dividend resumption, in all probability, will be postponed for some time. Financial condition is satisfactory."

Standard Trade and Securities discusses Servel, Inc., as follows:

"Although severe competition in the electrical refrigeration field has lowered sales and profit margins of the Servel Hermetic models, price reductions on Electrolux machines have been comparatively small; present quotations, after additions to cover the new Federal tax, are only slightly below those of last year.

"The volume of gas refrigerator sales was well maintained through July, and may show only a slight decline for the full year, but the decrease in prices is not believed to have been entirely offset by lower production costs. Because of a large potential market, the longer term outlook for the company is favorable, despite the recent introduction of a competing gas refrigerator.

"For the six months ended April 30, 1932, a deficit of $0.14 a common share was reported, against a profit of $0.22 for the like period of the preceding year. While it is possible that May-October results will present a more favorable comparison, a small deficit for the full fiscal year is likely.

"Net profit for the 1931 fiscal period was equivalent to $0.58 a common share. Dividends on the preferred stock, which have been declared for the entire year 1932, may be continued; the issue becomes cumulative on Jan. 1, 1933. Distributions on the common are rather remote."

KANSAS CITY DEALERS GIVE FREE ELECTRIC CURRENT

(Concluded from Page 1, Column 4)

were distributed by the Light Co.'s meter readers to the company's domestic users of electricity. There were 21 meter readers who delivered between 5,000 and 6,000 folders a day.

Current coupons allowing $5 credit on the buyer's light bill, were given to each person buying an electric refrigerator during this period. This was advertised as equivalent to 100 kilowatt-hours, which would be sufficient to run the refrigerator for three months.

The distributors and dealers divided the $5 cost between them. The coupons were printed in duplicate with the original being given to the buyer with delivery of the refrigerator. The distributor sent the duplicate, with his check for $5, to the Light Co., where it was credited to the buyer's account. When the distributor billed the dealer for the refrigerator sold, he added $2.50 to the dealer's cost.

The total expense of this campaign was set at $2,250, of which $1,500 was for advertising, $450 for printing, $250 for meter readers and supervisors, and $50 for miscellaneous items.

THE CONDENSER

PAYMENT IN ADVANCE is required for advertising in this column. The following rates apply:

POSITIONS WANTED—Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each. ALL OTHER CLASSIFICATIONS—Fifty words or less, one insertion $3.00, additional words six cents each. Three insertions $8.00, additional words sixteen cents each.

REPLIES to advertisements with box numbers should be addressed to the box number in care of Electric Refrigeration News, 550 Maccabees Building, Detroit, Mich.

POSITIONS AVAILABLE

INSTRUCTOR—position open for qualified Refrigeration Engineer with ability to instruct. Must be good correspondent, experienced in commercial estimating, installation and service work. Preference given man capable of preparing text for both resident and extension courses and in a position to invest $3,000 to $5,000 in well established school. State age, education, past experiences and minimum starting salary considered. Box 501.

SERVICE TRAINING

HERKIMER Institute of Refrigeration, 1819 Broadway, New York, trains and supplies men for service exclusively, or combined service and sales. Clean cut men, selected for sales ability and trained for service will prove useful in both departments. Build a flexible, contented, permanent organization. Eliminate excessive personnel turnover. Special terms for group training. Write for detailed information.

FRANCHISE WANTED

OUR DISTRIBUTING contract with the Frigidaire Corporation is about to terminate and we are in position to accept the distribution of a high class refrigerator, oil burner, radio or similar product. Have a highly trained technical selling force and desirable space in New York City. If interested communicate with us at once. L. R. Wood, Inc., 250 East 43rd St., New York City.

EQUIPMENT FOR SALE

CLEARANCE SALE of reconditioned Frigidaire equipment, model K 1/3 horsepower, model N ½ horsepower, model C 1 horsepower compressors. Coils model 14F, 17F, 18F, 63F, 78F, 96F household coils, ice cream cabinets, etc. Write for list of equipment. We buy Frigidaire equipment and parts. Lawton Huffman, Marshalls Creek, Pa.

Nema Sales By States For July, 1932

STATES and Territories	Quantity of HOUSEHOLD Low Sides
Connecticut	354
Maine	132
Massachusetts	612
New Hampshire	52
Rhode Island	71
Vermont	29
New England Total	**1,250**
Delaware	42
Maryland and D. C.	1,037
New Jersey	1,355
New York	7,691
Pennsylvania	842
Eastern Total	**10,967**
Kentucky	431
Ohio	1,437
West Virginia	172
East Central Total	**2,040**
Alabama	328
Florida	377
Georgia	263
North Carolina	207
South Carolina	133
Tennessee	298
Virginia	413
Southeastern Total	**2,019**
Illinois	1,308
Indiana	432
Michigan	689
Wisconsin	115
Great Lakes Total	**2,544**
Minnesota	265
North Dakota	46
South Dakota	34
North Central Total	**345**
Iowa	217
Kansas	189
Missouri	835
Nebraska	133
Middle West Total	**1,374**
Arizona	58
California	1,278
Nevada	26
Pacific Coast Total	**1,362**
Idaho	59
Montana	29
Oregon	121
Utah	63
Washington	152
Northwestern Total	**424**
Colorado	201
New Mexico	34
Wyoming	36
Rocky Mountain Total	**271**
Arkansas	280
Louisiana	288
Mississippi	110
Oklahoma	303
Texas	990
Southwestern Total	**1,971**
Total United States	**24,567**
Total Canada	**410**
Other Foreign (including U. S. Possessions)	**1,661**
Total for World	**26,638**

GEORGIA POWER CO. SELLS 98% OF QUOTA

ATLANTA—For the first time in history the Georgia Power Co. failed to "go over the top" in its summer electric refrigeration campaign. It missed its quota by 1.9 per cent, selling $196,169 worth of refrigerators out of a goal of $200,000.

The following districts sold 100 per cent or more of their quota: Macon district, 148 per cent; Augusta district, 125 per cent; Albany, 158 per cent; Rome, 137 per cent; Americus, 127 per cent; Milledgeville, 147 per cent; Waynesboro, 128 per cent.

Statesboro, 171 per cent; Vidalia, 154 per cent; Jonesboro, 137 per cent; Dublin, 136 per cent; Cornelia, 117 per cent; Manchester, 112 per cent; McRae, 107 per cent; Thomson, 103 per cent; Atlanta store, 103 per cent.

The following divisions made 100 per cent or better: Macon, 134.7 per cent; Augusta, 127.4 per cent; and Columbus, 101.2 per cent.

F. W. Collins of the Macon division won the $100 awarded to the division sales supervisor whose division sold the greatest per cent of quota. This prize is to be split 60 per cent to Collins, and 40 per cent to H. S. Dodgen.

J. J. McDonough of the Augusta division won $50 as the division sales supervisor whose division sold the second greatest per cent of quota. This prize is to be divided 60 per cent to McDonough and 40 per cent to Lawrence.

The class "B" prize of $100 to the district manager or senior salesman whose district sold the greatest per cent of its combined quotas on the spring offensive and this campaign, was awarded to W. W. Brennan of the Americus district. The second prize of $75, or the equivalent in clothing, was won by J. T. Cates of the Rome district.

Class "C" prizes awarded on the same basis as class "B" were won by F. F. Starr, Jr., Milledgeville district, who received $100, and J. A. Simmons, Waynesboro, who received $75 or the equivalent in clothes.

J. R. Vansant, Statesboro district, won the class "D" prize of $100 awarded on the same basis as the class "B" prize, and P. C. Lynch, Hartwell, won the second prize of $75, or the equivalent in clothing.

MODERN HOME UTILITIES GETS LARGER TERRITORY

HARTFORD, Conn.—Modern Home Utilities, Inc., distributor of G. E. electric refrigerators, G. E. Hotpoint ranges and the G. E. electric kitchen, for the state of Connecticut, has recently acquired Hartford county as part of its territory, succeeding the Newton-Parsons Co., former distributor. The sales and display rooms at 123 Ann St. here will be retained.

Modern Home Utilities, Inc., has been serving as distributor of G. E. products for more than five years and now covers the entire state with the exception of Fairfield county. In addition, Fishers Island, N. Y., is handled.

Five retail stores are owned and operated in Waterbury, New Haven, New London, Middletown and Hartford. Besides the retail stores, 35 dealers are associated with this organization.

The opening of the new Hartford store took place the week of Aug. 22. John M. Lyman is the resident manager of the store, being recently transferred from the New London store.

J. E. Neily is treasurer and general manager, S. G. Trainor is sales manager, and L. L. Stacy sales promotion and advertising manager of Modern Home Utilities, Inc.

AMERICAN SHOW CASE BUYS MICHIGAN STORE FIXTURE

DETROIT—The American Show Case & Mfg. Co., Detroit, has purchased the assets of the Michigan Store Fixture Co., also of Detroit.

Harry S. Sheresky, former president of the Michigan Store Fixture Co., has been elected vice president and a director of the American Show Case & Mfg. Co., in charge of designing.

Mr. Sheresky is known as one of the pioneers in "complete store" designing, in which building changes, store fronts, lighting, ventilating, cooling and heating, floor covering, painting and decorating, and display and counter equipment is embodied in one contract.

Officials of the American Show Case & Mfg. Co. report that the company's Muskegon plant is employing a night force in addition to a regular day shift to fulfill the present production schedule.

WESTINGHOUSE UNITS PLACED IN HONOLULU HOSPITAL

HONOLULU, Hawaii—In the large central kitchen and four kitchenettes which are a feature of the new $250,000 Harkness Nurses' Home of the Queen's Hospital here, Westinghouse refrigerators have been installed by the Hawaiian Electric Co., territorial Westinghouse distributor.

Eight Westinghouse water coolers were also part of the installation.

Proved Performance Sells Refrigerators To Today's Buyers

Every month sees new entries into the manufacturing and selling of electric refrigerators. Some are producing good refrigerators, some bad, some indifferent.

How is the prospective buyer to know?

The claims of one are substantially the claims of another. A $55 box is advertised as having all the features claimed by the leaders.

Claims! Claims! Nothing but claims.

But performance need no longer be mute.

Tomorrow's refrigerator selling will be on the basis of **proved** efficiency. Proved before the eyes of the prospect by scientific instruments that show exactly how the refrigerator will perform.

"Let the buyer beware" is headed for the shelf.

Those manufacturers who are first to grasp the new "proof" idea in refrigerator selling will go forward quickly on the wings of success.

We will be glad to co-operate with any manufacturer who is eager to prove the quality of his refrigerator.

Dry-Zero Corporation, Merchandise Mart, Chicago, Illinois
Canadian Office, 677 Broadview Avenue, Toronto.

THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN **DRY·ZERO**

WRITTEN TO BE READ ON ARRIVAL

Engineering Section

IN TWO PARTS PART TWO

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office

The business newspaper of the refrigeration industry

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DETROIT, MICHIGAN, SEPTEMBER 7, 1932

Entered as second-class matter Aug. 1, 1927, at Detroit, Mich.

THREE DOLLARS PER YEAR

SERVEL-COOLED HERCULES TRUCK USED IN SOUTH

Frigidaire Unit Used In Hauling Meats In Nebraska

ST. MICHAELS, Md.—To bring strawberries, asparagus and other southern-grown products from South Carolina and other southern states, Marshall's express here has put into service a Hercules truck refrigerated with Servel equipment.

The Hercules truck might be properly described as a "rolling refrigerator on wheels," because in design it is a large square-front truck body with the refrigerating compartment at the very front. The cab and motor of the truck are separate from the truck body, as may be seen from the above illustration.

The body is equipped with a special Servel mechanical refrigerating unit, a motor and a gas engine. The operation is entirely automatic.

The engine is equipped with a starting motor connected in series with a temperature control and coupled to the battery system of the chassis. This assembly automatically starts the gas engine at a predetermined high-temperature limit in the body, and stops it when the temperature has reached its desired low point.

When the truck is in the service sta-

(Concluded on Page 3, Column 3)

Meat Transportation

LINCOLN, Nebr.—A mechanically refrigerated truck, originally built to carry ice cream, is finding steady use in the transportation of meats between Lincoln and Omaha by the Red Ball Transfer Co.

The double-cylinder Frigidaire compressor powered by a Novo gasoline engine has proved effective in maintaining low temperatures for fresh meat cuts in the hot journey across the state of Nebraska. A magneto ignition system is used with the Novo engine to eliminate delicate automatic control devices. The unit is manually operated.

The compressor takes its power from the Novo gasoline engine by a 3:1 gear reduction and flexible coupling arrangement.

The driver is kept informed of the temperature in the truck body by a thermometer registering on the dashboard. The direct expansion system of refrigeration is used.

CONVENTIONAL G. E. UNIT EMPLOYS 'SCOTCH YOKE'

CHARLOTTE, N. C.—The new General Electric low-priced conventional type refrigerating machine uses the "Scotch Yoke" mechanism which operates on the same principle as Stearns-Knight and Willys-Knight automobiles, according to information just released to dealers of L. W. Driscoll, Inc., General Electric distributor here.

In action, the piston in the compressor is surrounded by a sleeve with slots (or ports), cut into it to give the valve action. Around the sleeve is the cylinder with an exhaust cut into it. The piston is hollow, and carries the intake port, the explanation continues. The sleeve is operated by an eccentric, or crankshaft, to produce the desired valve action.

Each moving part of the compressor receives oil under pressure from a central supply, by means of a small pump very similar to the oil pump used in the Monitor Top machine.

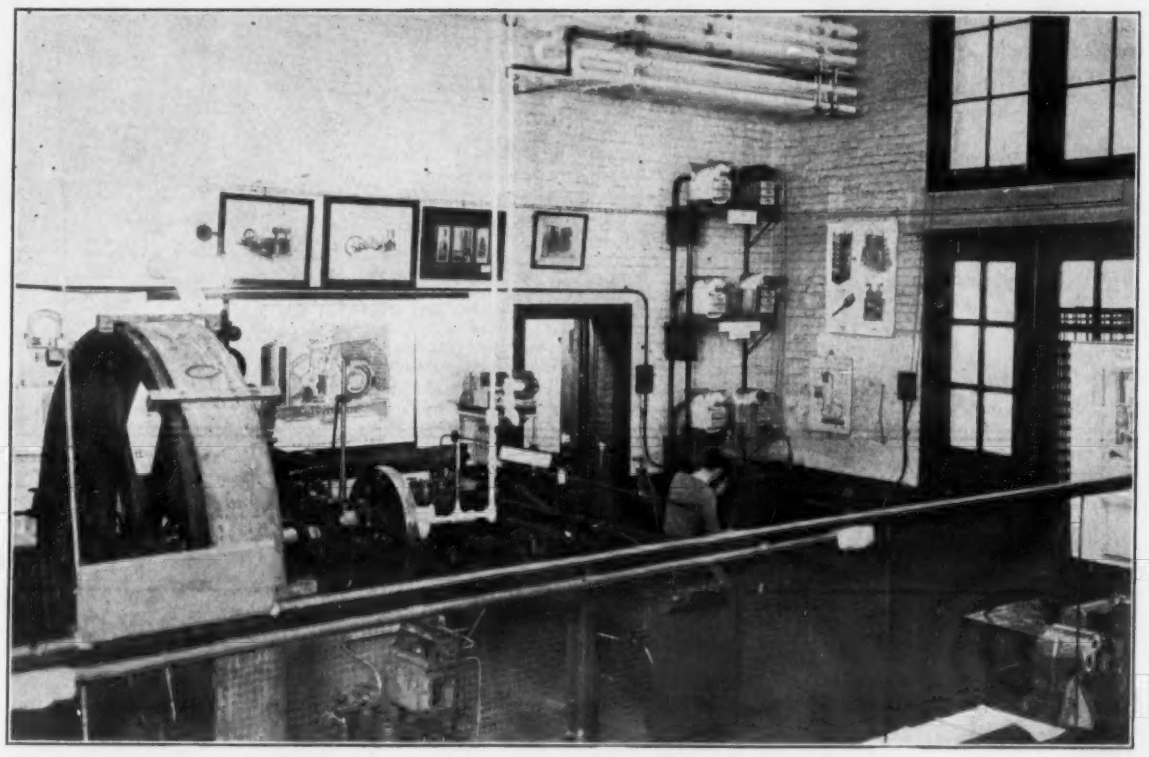
The condensing unit is mounted in the top of the cabinet. It draws air in through the right-hand side of the back of the cabinet, across the condenser, over to the left-hand side of the condenser, and forces it out through the left of the machine through vents in the back. All joints are silver soldered.

In an 80° F. room, the condensing unit has an ice melting effect of 87.5 lbs. of ice per day, the announcement states.

KANSAS CITY MEN START REFRIGERATION SCHOOL

KANSAS CITY, Mo.—A refrigeration institute has been established here by W. H. Schreiber and Ross Latshaw.

Refrigeration Laboratory



Some of the commercial and domestic equipment in the refrigeration laboratory at Wentworth Institute, Boston.

WESTINGHOUSE BUILDS NEW 6 CU. FT. UNIT

MANSFIELD, Ohio—Westinghouse Electric & Mfg. Co. has recently added a new model to its 1932 line of refrigerators, the new cabinet having 6.1 cu. ft. of net food storage capacity (Nema rating).

The new model fills a size "gap" in the 1932 Westinghouse line, officials of the Westinghouse refrigeration department stated in making the announcement.

The new model comes in both the "AL" and "AP" types, and will be designated as either AL-60 or AP-60, depending upon the exterior finish.

It has 11.4-sq ft. of shelf area, and is powered by a Westinghouse ⅛-hp. motor, the same that is used on the AL-73 and AP-73 cabinets.

Model AL-60 has a porcelain interior and an exterior finish of lacquer. It will sell for $200 f.o.b. factory

Model AP-60 is an all-porcelain cabinet which has the Westinghouse de luxe features which include interior electric light, rolling shelf, and built-in crisp pan. The f.o.b. price on the AP-60 is $235.

Both the AL-60 and the AP-60 will carry the Westinghouse 4-year service plan guarantee.

Boston Institute To Give Refrigeration Courses

BOSTON—Plans are reaching completion at the Wentworth Institute here for the regular evening course in electric refrigeration which starts on Sept. 26. The course is intended both for men already engaged in the refrigeration industry, and for those desirous of entering the refrigeration field. It will be held three nights a week for six months until next March, according to J. G. Praetz, Jr., chief instructor.

This course is designed to cover within the limited time as many different systems and lines of refrigeration equipment as possible, including actual operation, construction, maintenance, and in-

(Concluded on Page 3, Column 5)

Methyl Chloride

Featured in this issue are data furnished by Roessler & Hasslacher Chemical Co. on the physical and chemical properties of methyl chloride for commercial and domestic refrigeration.

SERVEL ANNOUNCES BOTTLE TYPE COOLER

EVANSVILLE, Ind.—Servel Sales, Inc., announces a new bottle-type water cooler, model SBC-2, with a Servel hermetic reciprocating type machine unit. It is rated with a capacity to cool 2¾ gals. of water per hour from 80 to 50° F.

The cooler has a beverage cooling compartment with a capacity for six pint-size milk bottles, the door to the bottle compartment being on the top of the cabinet adjacent to the water supply bottle.

The cabinet is finished in white or bronze pyroxylin, with a porcelain, fused-on-cast-iron, top. Fttings and trim are of chromium plated brass.

Fabricated out of pressed steel, the water tank is finished in porcelain. It has a connection in the machine compartment for cleaning or flushing the tank of any sediment from city water supplies.

The cup-filling faucet on the side of the cabinet has a valve operative by the pressure of the hand holding the cup, so that the drinker can fill a glass with one hand. A detachable, cast aluminum overflow bowl catches any drip from the faucet.

A ⅛-hp. split-phase motor, with an

(Concluded on Page 3, Column 1)

R. T. Smith in the Role of Professor

A refrigeration summer school for Gibson employes, conducted by R. T. Smith (left), Gibson chief engineer.

PENN SWITCH CO. DESIGNS 1-DIAL CONTROL SWITCH

Simplified Device for Household Units Announced

DES MOINES, Iowa—Engineers of the Penn Electric Switch Co. have just finished the design of a new one-dial control for household electric refrigerators, and production on it has been started at the factory.

Known as Penn type D, the new control embodies several design changes to simplify the device, and to make adjustments possible without removing either the knob or the switch, according to M. E. Henning, vice president of the company. It is built for either pressure or temperature control, the latter type with the usual thermostatic bulb connection.

The chief feature of the new control is one-dial operation, refrigerator temperatures being raised or lowered by turning the knob, and the machine started or stopped by pushing or pulling the knob. The temperature selector has nine points.

Adjustment of both range and differential is done by removing a small finishing screw in the center of the knob, making accessible a small adjusting screw inside the knob. Thus, in ordinary operation the adjustment is completely enclosed, Mr. Henning points out.

The overload protective mechanism in the control causes the knob to spring out a short distance when abnormal electrical conditions arise, revealing a red ring around the knob which notifies the user that the machine has switched off the power lines.

To avoid undue wear on the ratchet wheel, the switch is trip-free both when running and when resetting. A separate latching mechanism is provided for stopping the machine for defrosting purposes, Mr. Henning states, eliminating the constant use of the tooth engaging the ratchet wheel.

Other design features of the new control are greater space clearance between the electrical contacts, provision for mounting from either front or back of the mounting plate, and interchangeability on baffle plates of controls made by competitive manufacturers.

The Penn company has employed a number of artists to sketch original designs for dial-plates, so that individual manufacturers may have exclusive designs, Mr. Henning concluded.

N.A.P.R.E. PLANS TO MEET IN CHICAGO, NOV. 1 TO 4

CHICAGO—The National Association of Practical Refrigerating Engineers will hold its twenty-third annual convention and educational exhibition at the Sherman hotel here, Nov. 1 to 4, inclusive, according to Edward H. Fox, secretary.

The convention program will be under the direction of Edwin S. Libby, professor of refrigeration at Armour Institute of Technology. Further information regarding the meeting is obtainable from Secretary Fox, 435 N. Waller Ave., Chicago.

S. C. MARTIN TOURING WEST FOR ARMSTRONG CORK

LANCASTER, Pa.—Last Friday, S. C. Martin, assistant general sales manager of the Armstrong Cork & Insulation Co., left the home office of the company for the Pacific Coast, where he expects to spend about four weeks making a survey of business conditions in that territory and conferring with West Coast representatives of the company.

BRITISH CONCERN PLANNING SOLID CO-2 PRODUCTION

LONDON, Eng.—C. & U., Ltd., 6 Conduit St., recently organized by E. A. Udy, W. Y. Cooke and associates, is securing patent rights for the manufacture of solid carbon dioxide at Hong Kong, China; Straits Settlements and Federated Malay States.

Plans are being made for the construction and operation of plants at these different points.

A Page for the Service and Installation Man

Wright Describes Methods, Materials For Lapping Compressor Seals

By L. K. Wright

LARGE commercial compressors make use of standard packing rings and glands to provide a seal against the entrance of air or the escape of refrigerant and oil. Small apparatus, of both commercial and household type, employs for the most part, sylphon or expanded metal bellows in place of the rubber, fabric, or metallic packing used on the large machines.

Irregular contact between the shaft seal or bellows, and the seal face which may be on the shaft or crankcase, is invariably caused by foreign particles lodging or becoming embedded between the rubbing surfaces, and results in squeaky operation. Continued operation of the unit under such a condition is certain to ruin the seal, and in many cases to require replacement of the shaft or seal face. If unattended, loss of refrigerant and oil eventually result.

Of course, the seal construction and manner of effecting a gas-proof seal differs with almost every unit. Some bellows are secured to the shaft, others bolted or squeezed in place on the crankcase. For this season, the repair of seals will be explained in general terms, so that the individual service man can adapt it to any particular design of compressor.

To proceed with a seal repair or replacement, first shut off the suction and discharge lines on the compressor, for unless the unit is located in a position awkward to work on, it need not be removed from the base.

Relieve the gas pressure from the crankcase and remove the seal. If the seal nose is rough, place a sheet of crocus cloth on a piece of plate glass, about 4 in. square, so that a true surface backing is had, and apply several drops of refrigerating oil.

Do not under any circumstance attempt to use glycerine or glycol in lieu of oil. Use the oil found in the crankcase of the compressor. Another mistake often made by the uninitiated is the use of emery cloth, in the mistaken idea that it "cuts" better than crocus. Emery will embed itself in the face, cut the reassembled parts and render the seal useless in very short order.

Hold Seal Firmly

The seal must be firmly held between the fingers and rubbed gently on the crocus cloth, with a rotating motion. The seal face must be held perfectly square with the lapping surface, so that a true, even seat results. An uneven seat will obtain if the seal is allowed to rock or wobble. In most cases a minute or two is all that is required to remove the grooves from the face of the seal.

If the face against which the seal nose rests is removable as a plate, this too may be trued in a similar manner. Crocus cloth is only necessary where a badly grooved condition is found.

When a true, even face is secured through the use of crocus cloth, backed by a truly flat surface, it may be further trued by using Bon Ami as a lapping compound.

Mix Bon Ami powder with refrigerating oil, secured from the crankcase, until a thin paste is obtained. The Bon Ami and oil may be mixed directly on the plate glass square. Using the plate as a lapping surface, the seal should be rotated and lifted off the plate every third revolution to allow the lapping compound to spread evenly over the surface.

Continue lapping until a perfect surface is had, taking care at all times not to rock the assembly.

Mixing a Polishing Compound

After a smooth surface is obtained, remove all traces of the Bon Ami from the seal face and clean off the glass plate. Prepare a polishing compound by mixing flowers of sulphur and refrigerating oil to the consistency of a thin paste. Use this material to polish the face.

When the face is polished, the glass plate and seal should again be cleaned. Clean the seal thoroughly by washing it to remove all traces of dirt and compounds, and then lap the face of the seal on the plate glass, using finely powdered graphite. This operation will embed tiny particles of graphite in the minute pores of the seal surface and will result in better operation.

Most manufacturers advise putting some refrigerating oil or vaseline in the bellows before installing it, to ease it if it heats or temporarily sticks.

With the bellows reinstalled and the compressor ready to operate, allow refrigerant gas to build up in the crankcase, if possible, and allow the compressor to operate for a half hour. By allowing gas to enter the crankcase, all air will be driven out.

Test at Small Back Pressure

The compressor should be allowed to operate under a back pressure of about 1½ lbs. Adjust the valves or controls if necessary to maintain this constant pressure on the crankcase. If too much pressure is imposed the seal is bound to leak, and if a vacuum is used when running in the seal air may be sucked into the system.

After a short run, varying from a few minutes to a half hour, the two sealing surfaces will align themselves and present a perfect seal, so that the apparatus may be adjusted for normal operation and placed into regular service.

In cases where a shoulder on the shaft is used for a sealing surface, it may be necessary to lap it if it has become grooved. This may be easily accomplished by the use of a lapping tool, in the form of a sleeve. Steel tubing, of all internal diameters, with a great variety of wall thicknesses, is available so that the proper size may be selected. The tubing should fit the shaft end snugly, without any play.

Making a Lapping Sleeve

The end of the tubing must be cut perfectly square and then provided with a half dozen niches or grooves to hold the grinding compound. These grooves may be cut in with a fine file. After cutting in the compound grooves grind the face perfectly true before using.

The lapping sleeve can be slipped over the shaft and made to bear against the surface to be lapped by use of a spring, washer and nut. If the shaft end is not provided with a thread to accommodate a nut, use a section or ring of the sleeve material, provided with a set screw. Too strong a spring pressure must not be used.

Rotate the tool with the fingers and pull back every third turn so that the grinding compound can spread evenly over the surface. Grind with crocus mixed with oil; follow with Bon Ami paste, finish with sulphur and oil and then treat with powdered graphite.

The entire job can be accomplished in some compressors without removing from the base. Be sure to wash out all traces of grinding compounds before treating the face with powdered graphite and reassembling.

Where the job is done in the shop it is easier to provide a glass plate for each operation. If a service car is used, this practice may be adhered to, but where the service man travels on foot, such as in large cities, or in the case of long hops, a single plate may be used, washing it carefully before applying another compound.

The materials required, which may be obtained locally, are:

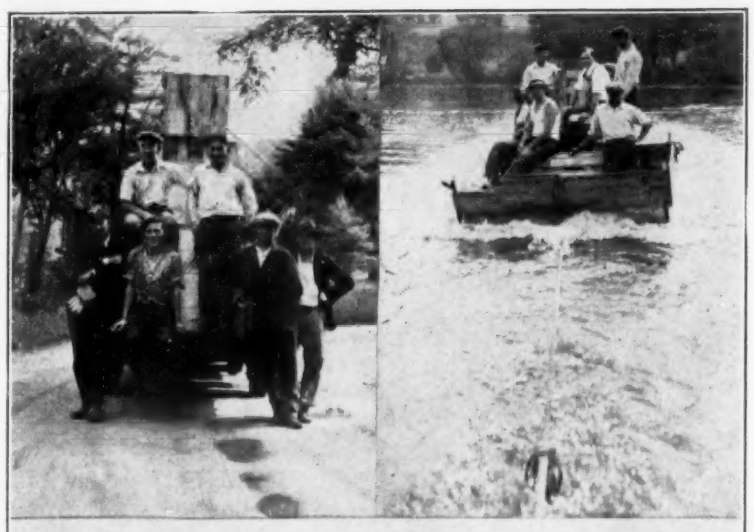
1 pint of refrigerating oil.
2 ounces Bon Ami powder.
2 ounces crocus.
1 piece of crocus cloth.
2 ounces powdered flowers of sulphur.
2 ounces powdered graphite.
1 piece of plate glass, about 4x4 in.

For shaft faces, make up the proper grinding tubes, together with spring, washer and nut.

FIRM CHANGES NAME

MINNEAPOLIS—The Minneapolis Air Conditioning Co., manufacturer of air-conditioning and humidifying equipment, has been reorganized under the name of the Tropic Breeze Corp. L. E. Jordan is head.

By Barge to an Island



There was no boat large enough for a Frigidaire W-18, so installers traveled by motor truck and a motor-boat-towed barge to deliver Frigidaires W-18, W-6 and W-4 on an island in the middle of Twin Lake, near Canaan, Conn. The equipment was sold and installed by the Connecticut Power Co., Canaan, Conn.

Detroit Service Firm Finds Contract Commercial Business Profitable

DETROIT—Regular contract business for the maintenance of apartment and commercial refrigeration systems is considerably more profitable than domestic refrigeration service, according to officers of Mercier & Clark, Inc., an independent service company here, because contracts are made with financially responsible parties, and the income from them is regular and assured.

In order to build up its contract business, this company is promoting interest and soliciting owners of apartment houses, management companies, commercial food markets, etc., with a plan to give regular maintenance service on the refrigeration equipment used in these establishments.

Their interest in contract business is largely the result of experience of W. F. Mercier in elevator repair work. Mercier spent several years in the elevator departments of Otis Elevator Co. and Westinghouse Electric & Mfg. Co., and later organized an elevator service firm which offered building owners either inspection service or full maintenance service on elevator equipment.

G. H. Clark, other member of the firm, was for several years with Copeland Products, Inc., and the Detroit Lubricator Co. He is in charge of all refrigeration service work. With these two men directing the company, it is able to offer both refrigeration and elevator maintenance service. And, according to C. C. Card, office manager, it is often possible to secure a contract for one type of service, after the company has previously had a contract for the other.

Periodic inspection only has not proved practicable as a basis for contracting for refrigeration service, according to E. A. Mayrend, secretary, because often an inspection reveals a need for major repairs on a refrigeration system which a nominal inspection charge would not cover.

Accordingly, refrigeration service contracts include complete maintenance of a system, as well as any and all repairs that may be required in the contract period—usually one, two or three years. No contract is accepted for less than one year.

Often, the service company insists that a building owner order a complete overhauling of refrigeration equipment before a maintenance agreement is consummated. The charge for a maintenance contract depends principally on the condition of the equipment when the contract is made, Mayrend explains.

Mercier & Clark has also built up a fairly profitable business in supplying various parts and materials for refrigeration service—refrigerants, belts, etc. Thus other Detroit service men can obtain standard parts from Mercier & Clark's stock, and the latter enjoys a certain margin of profit from the resale.

The household refrigeration service business has been somewhat difficult this year, particularly in collections, Mayrend reports. This trouble has been alleviated by requesting cash for such work.

All service men with the company are instructed to collect for their work and the parts used as soon as they have completed a service job, according to Card. If any employe neglects to do this, the cost of the work and parts is deducted from his weekly salary.

These employes are paid on a straight salary basis. This, thinks the office manager, is important in building and keeping goodwill for the company, because a salaried employe will not be inclined to sell parts which are not actually needed, as a commission man might. Neither will he waste time on a job, as might a man paid on an hourly basis.

On the whole, salaried service men will do just what is needed on a job, and will not install new parts unless necessary, the result being that the company's charges to customers are kept at a minimum, Card says.

Each of the Mercier & Clark service men is a specialist on several makes of refrigeration systems, and is sent on service calls only to places where these systems are in use, according to Card.

The company offers 24-hour service, and guarantees to have a service man on any job in the Detroit area within an hour and a half after the owner calls the office.

When commercial business has been built up to a satisfactory volume, all household service work will be dropped, says the office manager.

The company has some difficulty in getting replacement parts from the large machine manufacturers, but when a part is unobtainable from the regular manufacturer, it can usually be made on the lathes and drill presses in Mercier & Clark's workshop.

Last November the company started the assembly of complete electric refrigerators, but found that low-priced competition rendered that operation unprofitable so it was discontinued in May.

NEW SERVICE COMPANY TO SPECIALIZE IN WELSBACH

PHILADELPHIA—William Fahrbach and E. P. Goodison have organized the G. & F. Refrigeration Service Co. here to service Welsbach and other electric refrigerators in this vicinity.

Fahrbach served for five years as installation manager for the Welsbach Co. of Gloucester, N. J., and Goodison has served as service manager for the Kelvinator organizations in Pittsburgh and Philadelphia, for Electrolux in Philadelphia, and was for three years national service manager for the Welsbach Co.

Rust

He leaves a permanent *stain* on everything he touches

Rust spots and blemishes in metal can not be covered up. They become permanent stains which are despised throughout the life of the product.

Many leading manufacturers have found a way to meet this problem. They are using SUPERIOR SUPER METAL. These sheets are especially suitable for refrigerators, ice cream cabinets, etc.

They are recommended for use wherever unusual corrosion-producing conditions are present. They combine superior rust-resisting qualities, along with durability, workability and appearance. A zinc coating is applied by a special patented heat-treating process which will not chip, flake or peel, and it withstands difficult forming operations without fracture. The surface takes paint, lacquer or baked enamel readily, without special treatment.

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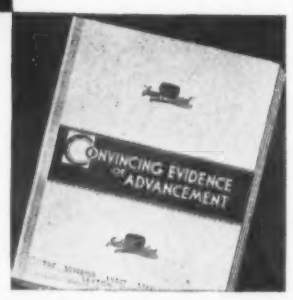
Manufacturers of: Black, Galvanized, Long-Terne and Special Coated Sheets, Roofing and Kindred Products; Billets, Rods, Wire, Nails and all types of Fence.



- The patented heat-treating process fuses the coating to the base metal affording unusual resistance to rust.
- The sheets are soft and ductile and the coating will not chip, flake or peel under the most difficult forming operations.
- Offers an ideal surface (a bond) to which paint, lacquer and enamel finishes can be applied, without special treatment, and it will retain these finishes under severe conditions of use.
- Through the widespread adoption of this special coated sheet metal cabinet manufacturers are offering the highest efficiency obtainable.

"Superior Super-Metal" PATENTED PROCESS

Superior Galvannealed

NEW EXHAUST CHAMBER INTRODUCED BY DEVILBISS

TOLEDO—The DeVilbiss Co. has just introduced a new type of exhaust chamber for use where spraying is done in an already fire-proofed room.

It provides a means of mounting the exhaust fan and distributing the exhaust properly where a complete spray booth is not required, or where an exhaust fan mounted in the wall or window is not adequate for the requirements.

SERVEL ANNOUNCES NEW WATER COOLER

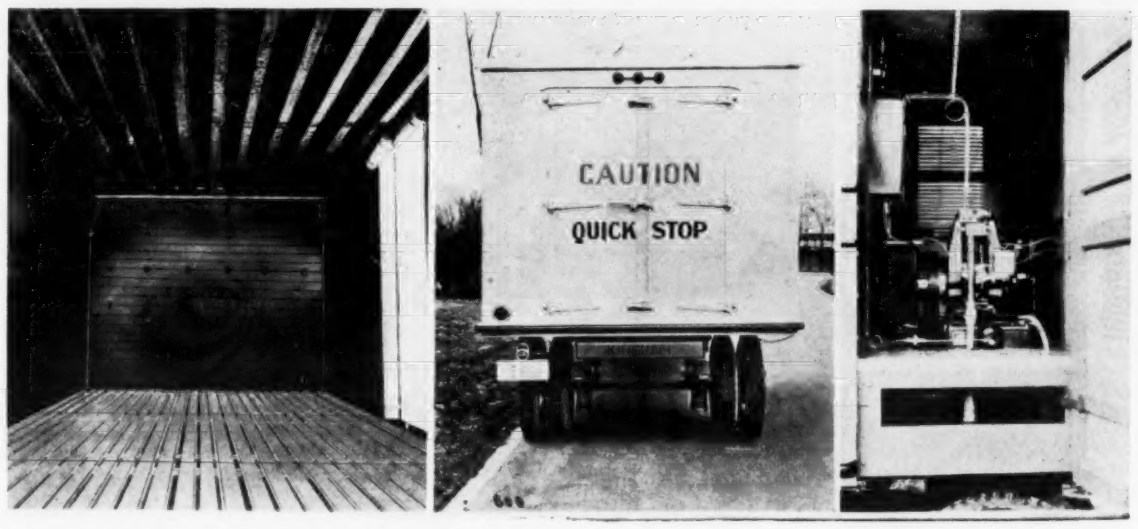
(Concluded from Page 1, Column 4)

external starting switch, accessible through the machine compartment door, drives the compressor. Selective thermostatic control is used, incorporating an overload relay and the starting switch.

The refrigerating system contains 1½ lbs. of methyl chloride.

Exterior dimensions of the cabinet are 44⅞ in. high, 18¼ in. wide and 23¾ in. deep. The height with the standard 5-gal. bottle is 60 in. Crated for shipment the cooler weighs 320 lbs.

Refrigerated Strawberry Transportation



Left: Interior of new refrigerated truck made by Servel, showing finned pipe cooling coils; center: rear view of truck; and right: close-up of the machine compartment at the front of the body.

Servel-Refrigerated Truck Hauls Berries

(Concluded from Page 1, Column 1)

tion or loading room the Servel unit can be operated from local light current, while on the road it is driven by engine.

Each of the driving units is equipped with an over-running belt-driven clutch so that when the electric motor is driving the equipment the gas engine is stationary or vice-versa.

The chilling units consist of galvanized iron pipes with spiral copper fins. The coil is 11 pipes wide mounted at the top and extending the full length.

The sides and end of the truck body are of 3¾-in. thickness, 2½ in. of which is Dry-Zero insulation.

Exterior surface is of automobile sheet steel and the interior is lined with tongue-and-grooved fir.

The roof has 4½-in. Dry-Zero insulation, with an exterior surface of heavy canvas aluminum coated. The ceiling is lined with galvanized sheet metal.

The refrigerating unit is located at the extreme front end of the body, separated by a partition. The total weight of the body is approximately 9,000 lbs.

REFRIGERATION GIVEN BY BOSTON INSTITUTE

(Concluded from Page 1, Column 3)

stallation of refrigeration plants. Domestic and commercial systems using ammonia, carbon dioxide, sulphur dioxide, methyl chloride, F-12 and others will be studied in detail.

Absorption and compression systems, centrifugal compression, mercury compression, dual and multi-stage compression, direct and indirect expansion, dry and flooded evaporators, unit coolers, dry ice and ice making will be discussed in a series of lectures illustrated by slides, charts and actual equipment.

The work includes not only the study of the theory of refrigeration as applied to modern systems, but also many problems of a practical nature. A complete refrigeration plant test following the A.S.M.E. test code will be run on one of the laboratory systems during the course, Mr. Praetz states.

Approximately half of the total time will be spent in the refrigeration laboratory on compressors, condensers, coolers, evaporators, automatic control devices, automatic expansion valves, thermostatic controls and test instruments.

Installation, servicing and operation details of many of the domestic units on the market will be given in lectures and laboratory work. A complete multiple unit installation, both code and non-code, will be made in the laboratory by the students, to give actual experience in tube and conduit running, valving, bi-temperature control work and servicing adjustments on commercial units.

Lecture work will include the use of refrigeration tables and charts on the various refrigerants and safety code regulations. Lectures will be given discussing the commercial and domestic refrigeration systems abroad in England, France, and Germany, and their control systems.

On Our Bookshelves

"BROWNE'S COLD STORAGE TEMPERATURES AND HUMIDITY CHART, and PART I OF MODERN, SCIENTIFIC COLD STORAGE AND REFRIGERATION"

Author and Publisher: Milton W. Browne, 3103 Coleman Road, Kansas City, Mo. Price: $10. Date of publication: 1932. Pages: 152.

A WEALTH of practical data for the cold storage operator and commercial refrigeration engineer is contained in this new cloth-bound 10x13-in. book compiled by Mr. Browne. The book contains two sections, the first a detailed tabulation of air conditions recommended for proper storage of various fruits, vegetables, meats and flowers, while the second section supplies descriptive information about these same food products and tells how to store them at low temperatures.

A total of 451 cold storage products are tabulated in the 41 pages comprising the first section of the book. Typical information about the various products includes: storage temperatures, critical temperatures, freezing temperatures, composition by water and solid matter, specific heat, latent heat, relative humidities under natural and forced air circulation, frequency of recirculation, and storage periods under natural and forced air circulation with humidity control.

This section also gives certain fundamental technical information about the computation of relative humidities, definition of refrigeration and cold storage terms, and charts for determining absolute humidity and dew-point of air when the temperature and relative humidity are known.

Of particular interest is the viewpoint of the author that ventilation is a useless cost in cold storage work, not only in the cost of installing and operating ventilating equipment, but in the loss of refrigeration through heat leakages.

The author holds that ventilation does not help the flavor and quality of cold storage products, as some cold storage operators have believed. Mr. Browne states that "the constant maintenance of correct, even, unvarying temperatures, air circulation, and proper percentage of controlled humidity are the significant factors in the successful storage of all perishable food products."

The second section of the book, entitled "Part I, Modern, Scientific Cold Storage and Refrigeration," describes and gives the distinguishing characteristics of 75 different standard cold storage varieties of apples, tells when and how to store eggs (discussing also egg grading, how to avoid weight losses, etc.), and gives similar information about pears, celeries, onions, bananas, and other food products.

Fur storage and the effects of incorrect temperature and humidity on stored furs are subsequently treated, and methods of cutting and storing flowers, plants, and bulbs. Several pages are devoted to refrigerated storage of meats, and the operation of cold storage rooms preserving various kinds of meat.

The volume concludes with a discussion of precooling of fruits and vegetables, explaining how it is done for several species, and giving factors governing the efficiency of precooling plants.

"PRINCIPLES OF REFRIGERATION"—Third Edition

Author: W. H. Motz. Publisher: Nickerson & Collins, Chicago. Publication date: 1932. Pages: 1,032, with index. Price: $7.50 with cloth binding; $8.50 with Morocco binding.

IN this, the third edition of "Principles of Refrigeration," the author has rewritten and rearranged much of the material which appeared in the two earlier editions of the work, and has added some 300 pages of new material to make the volume an up-to-date and comprehensive library of information regarding the fundamental and elementary principles underlying the operation of ice-making and refrigerating machinery.

While the book contains information and data which are of considerable interest and value to practicing refrigerating engineers and other persons concerned with the actual construction and operation of refrigeration equipment, its comparatively simple phraseology, slight use of higher mathematics, and orderly presentation of material make it suitable for use by beginners in the study of refrigeration, or as a textbook for students in technical schools.

The theoretical and fundamental operating principles of refrigeration machinery are given attention first. Then the book undertakes the discussion of the properties and values of principal media used in modern refrigerating apparatus, and the fundamental laws underlying the transfer of heat. Following this is an outline of the design, construction and operation of the various parts of refrigeration machinery.

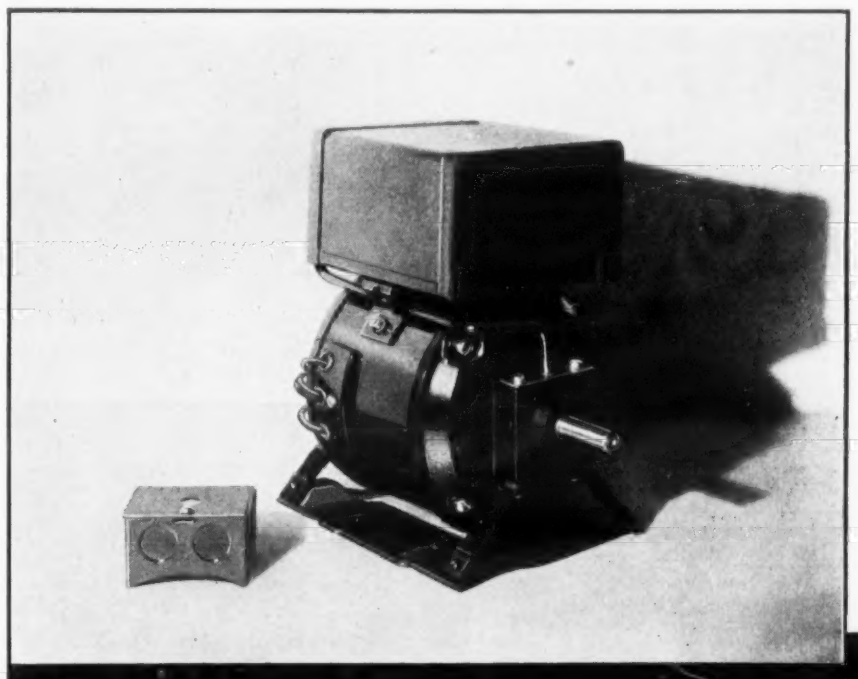
Each system of refrigeration is explained and thoroughly discussed, after which the author takes up a study of the applications of refrigeration in cooling solids, liquids and gases, and in the cold storage of commodities.

Sixty-eight pages of the new edition are devoted to the subject of cooling and conditioning the air, and in the chapter dealing with this relatively new phase of refrigeration, Mr. Motz first explains the various properties of air, then the problems presented the designer of air-conditioning equipment, and finally, the various types of equipment being used at present in the field of comfort cooling. With this latter discussion is a further enumeration of air-conditioning problems, such as infiltration, heat from lights and motors, heat from sunlight, etc.

One of the book's closing chapters departs from the mechanics of refrigeration, and discusses at length the economics of refrigeration—its operating costs, current consumption, investment expense, load factors, manufacturing costs, etc.

The work contains 322 pictures and more than 100 tables to illustrate and simplify some of the writer's discussions.

Collaborating with the author in the book's preparation were E. S. Libby, professor of refrigeration at Armour Institute of Technology, Chicago, and H. G. Venemann, professor of refrigeration at Purdue University, chairman of the educational and examining board of N. A. P. R. E. The book has been adopted by this association for study in its national lecture course.



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ANSUL SULPHUR DIOXIDE
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Properties of Methyl Chloride Given For Use In Refrigeration*

ARTIC is the registered trade name for R & H methyl chloride, 99.5% pure—a special grade for refrigeration purposes manufactured and marketed since 1920 by The Roessler & Hasslacher Chemical Co., Inc. Although methyl chloride had been known and made for many years—Peligot and Dumas discovered it in 1835 and a number of European concerns later started its manufacture on a limited scale—R & H was the first to manufacture in commercial quantities a highly refined product for refrigeration purposes.

Chemically, Artic (R & H methyl chloride) is a chlorinated hydro-carbon with the formula CH_3cl. At ordinary temperatures and pressures it is a colorless, sweet-smelling vapor. It is readily liquefied, since its boiling point at atmospheric pressure is —10.65°F (—23.7° C), and it is handled and shipped in the liquid form. The density of the liquid is 1.00 at its boiling point under 760 mm. pressure.

It is stable and non-corrosive to most metals even in the presence of moisture, is only moderately flammable, and has a relatively high ignition temperature. Artic vapor is not harmful to furs and flowers. Food and water retain very little methyl chloride even when saturated with it for a long time and the small amounts absorbed have little effect on the animal system.

Artic has a relatively high latent heat of vaporization. Because of this property and its other general characteristics, Artic is one of the most common refrigerants for fractional tonnage refrigeration machines. It is successfully used in many types of units, both domestic and commercial, for almost all kinds of food and industrial refrigeration.

*Published by courtesy of Thomas Coyle, chlorine products specialist of the Roessler & Hasslacher Chemical Co.

Physical Properties of Methyl Chloride

Chemical Formula	CH_3Cl
Molecular Weight	50.481
Color, gaseous and liquid	Colorless, transparent
Odor	Faintly sweet, ethereal; non-irritating to eyes and lungs
Melting Point	—144°F (—97.6°C)
Boiling Point (760 mm.)	—10.65°F (—23.7°C)
Specific Gravity (compared with water at 4°C)	
—23.7°C (—10.65°F)	1.00
20°C (68°F)	0.92
70° C (158°F)	0.80
Critical Temperature	289°F (143°C)
Critical Pressure, absolute	970 lbs. per sq. in.
Density of Gas (Air=1.0, at 32°F and 760 mm. pressure)	1.78
Specific Heats, Cp	0.24
Cv	0.20
Cp/Cv	1.20
Latent Heat of Vaporization	Table III
Viscosity, 0°C	0.277 centipoises
20°C	0.236 centipoises
Solubility:	
Artic in water	Three to four volumes of methyl chloride vapor in one volume of water at ordinary temperatures and atmospheric pressure.
Artic in alcohol	Readily soluble
Artic in chloroform	Readily soluble
Artic in glycerine	0.4% by weight at 25°C
Glycerine in Artic	0.04% by weight at 25°C

The boiling point of Artic changes by approximately 0.031°C. per mm. of mercury pressure change.

Explosibility

The explosion hazard of methyl chloride is moderate, according to Underwriters' Laboratories Report MH No. 1417. This report states that mixtures of methyl chloride vapor in air are explosive only when the concentration by volume of methyl chloride (Artic) is between 8.1% and 17.2%.

In spite of this explosive range, however, there is no possibility of an explosive mixture of air and methyl chloride developing within a refrigeration system containing Artic. Normally, a system employing Artic operates under positive pressure on the suction side, precluding the possibility of air being drawn into the system.

Even if a vacuum existed in the system and a leak developed allowing air to be drawn in, excessive head pressure would develop and the machine would stop running long before enough air could be drawn in to make an explosive mixture. Also, there is no danger that Artic will decompose into hydrogen or other highly flammable substances, since it is stable at all operating temperatures in a refrigeration system.

The possibility of the formation of explosive mixtures outside of the refrigerator, in the event of a serious leak in the refrigeration system, is remote. The average kitchen has an air capacity of about 1,000 cubic feet, and the usual household refrigerator has a capacity of only 3 pounds of Artic. If all this Artic were released from the equipment at one time, and there were no ventilation in the room, the concentration of methyl chloride in the air would be only 2.5% by volume—well below the lower limit of 8.1% required for an explosive mixture.

To form an explosive mixture in air, (lower limit 8.1% methyl chloride) it would be necessary to liberate almost 10 lbs. of Artic per 1000 cu. ft. of air space, and considerably more if there were any ventilation. Nine pounds of Artic in 1000 cu. ft. of air would not form an explosive mixture.

The safety of Artic, from an explosive standpoint, is further evidenced by the fact that to date not a single instance of an explosion has been reported in which Artic in a unit system was shown to be responsible.

Flammability

Artic is a moderately flammable refrigerant, according to the Underwriters' Laboratories Report MH No. 1418, and as such constitutes a relatively low fire hazard. The apparent ignition temperature was found to be 1169.5°F., a temperature quite high and never reached in ordinary refrigerator operation.

The relative difficulty of burning Artic is best illustrated by the following: (1) Artic in a glass beaker, on ignition burns but feebly and requires frequent relighting before it is consumed, and (2) If the valve on a cylinder of Artic is opened slightly, the issuing vapor can be lighted but the resulting flame is instantly put out upon opening the valve a trifle wider.

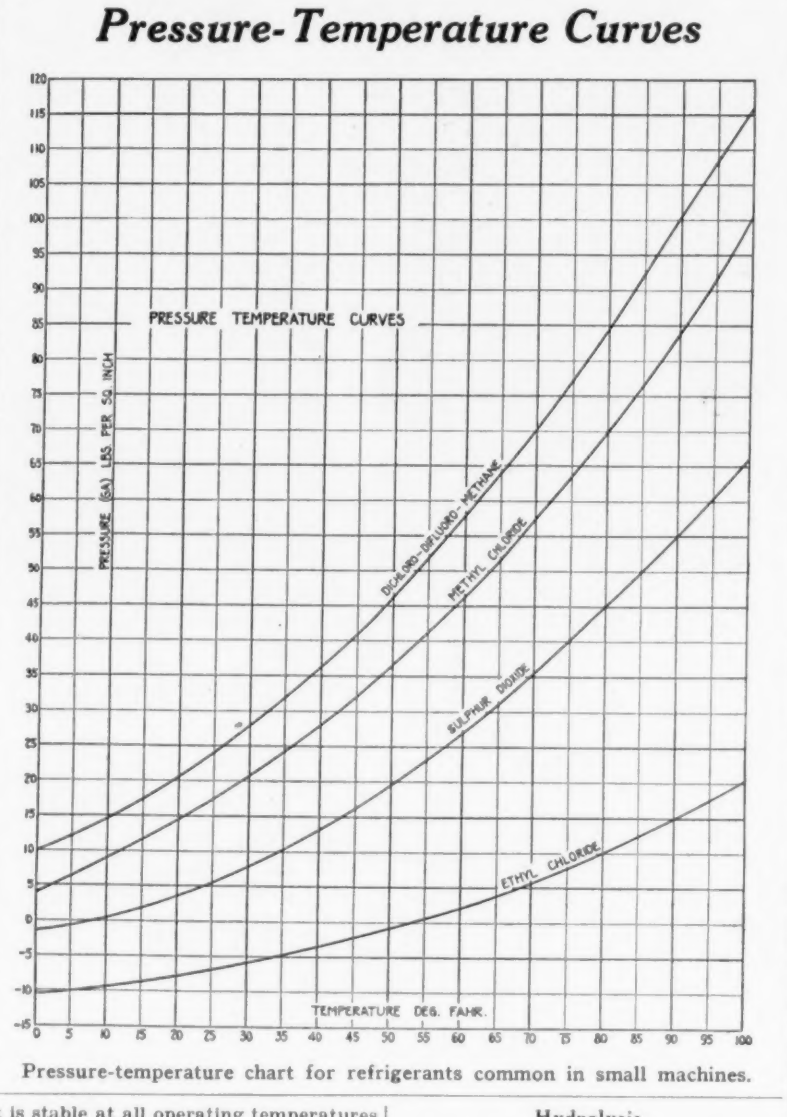
Corrosion Data

Artic does not corrode metals or alloys generally used in refrigerator system construction, even if moisture is present. This is an important feature for it permits the manufacturer a wide choice of materials. Zinc, aluminum, and die castings are not recommended for parts which come in contact with the refrigerant, because it is extremely difficult to maintain an absolutely dry system. In the presence of moisture, some corrosion of these metals may occur.

In testing for corrosive action of methyl on metals, Macintire used test plates of six different metals. Samples of each metal were sealed in glass tubes with liquid methyl chloride, with methyl chloride and lubricating oil, and with oil alone. The tubes were heated in a water bath at 165° to 175° F. for 24 to 48 hours, after which they were opened and the metals examined for corrosion. In every case, no corrosion was observed.

The experiment was repeated, using a combination of these metals to provide opportunity for galvanic action. Again no corrosion was observed, indicating that the common materials used in refrigeration construction are not corroded by methyl chloride.

Pressure-Temperature Curves



Pressure-temperature chart for refrigerants common in small machines.

Hydrolysis

Artic does not hydrolyze with water under conditions existing in refrigeration systems. This precludes any possibility of corrosive solutions being formed through the hydrolysis of methyl chloride. Neither will Artic mix with water, so that should water be introduced into the system, it will be eliminated at the expansion valve as ice. These features are important because it is difficult to maintain an absolutely dry refrigeration system.

The presence of moisture in the refrigeration system should be guarded against, however, for deposits of ice in the expansion valve or low pressure line may cause blocking. Although Artic is manufactured practically free from moisture, water may get into the refrigeration system through the use of improperly dried equipment or from oil.

Stability

Artic is stable towards heat, no decomposition taking place at temperatures encountered in the normal course of refrigeration operation.

According to Dumas and Peligot, dry methyl chloride is decomposed completely when passed through a porcelain tube heated to cherry redness. Macintire determined the decomposition temperature of methyl chloride when heated in contact with metals used in refrigerating machines. He found no evidence of decomposition below 795° to 800° F.; above this temperature, decomposition started and at 925° to 930° F. it was quite noticeable. The metals showed no corrosion at higher and lower temperatures.

Open Flame Decomposition Tests

Decomposition products of Artic when in contact with ordinary illuminating gas flames are carbon dioxide, carbon monoxide and hydrochloric acid gas, according to a recent test conducted by the Jackson Laboratory of the E. I. du Pont de Nemours & Co., Inc. No phosgene or free chlorine was found.

Even after 30 minutes exposure to the open flame, only small concentrations of decomposition products were formed, indicating but slight decomposition of Artic. The irritant character of these products gives a definite warning and acts to prevent prolonged exposure.

Complete details of these tests are given in "Kinetic Chemicals Report on Tests of Refrigerants," *Engineering Section* of ELECTRIC REFRIGERATION NEWS, pages 5-11, Dec. 30, 1931.

Physiological

There are a number of instances which support the belief that small concentrations of Artic can be breathed over a long period without any serious effects. But in general it must be understood that all gases except pure air, are more or less toxic or asphyxiating, and breathing them is always to be avoided. Adequate ventilation should be provided wherever volatile liquids or gases are used.

In a series of tests conducted by the United States Public Health Service and reported in Bulletin No. 185, it was found that guinea pigs exposed to 2.75% methyl chloride vapors for 10 minutes, 1.67% vapors for 30 minutes, 0.22% for 90 minutes, 0.12% for 150 minutes, and 0.04% for 600 minutes showed, with but few exceptions, no pathological changes, and no deaths occurred either during or after exposure.

During a period of 20 years many technical and other employes of R & H have handled methyl chloride under various conditions incidental to experimentation and extensive large scale production. No trouble of a serious nature due to physiological properties of methyl chloride has been experienced.

One or two men were exposed to excessive concentrations of methyl chloride and suffered an attack similar to alcohol intoxication. These men recovered completely in a short time and apparently suffered no after effects whatever. Many of the employes of this company have worked daily for many months with methyl chloride without experiencing any physiological effects. Precautions as to ventilation are observed and carelessness is not tolerated.

In general, the condition resulting from excessive exposure to Artic is similar to alcohol intoxication. This condition has characteristic symptoms, such as drowsiness, mental confusion, nausea, and possibly vomiting. For cases of excessive exposure to Artic, a doctor should be called. Fresh air is immediately beneficial in treatment.

Artic Mixtures

Modern refrigerator system design and construction has accomplished much in eliminating mechanical leaks, hence the detection of leaks in the refrigerator system by smell or some indicator is convenient but not essential.

But there are outside causes, earth tremors and settlement of structures,

(Concluded on Page 5, Column 1)

Theoretical Power and Volumetric Characteristics

TABLE I—POWER (HP.) REQUIRED TO PRODUCE ONE TON OF REFRIGERATION

At Indicated Condenser Temperatures and Pressures of Artic

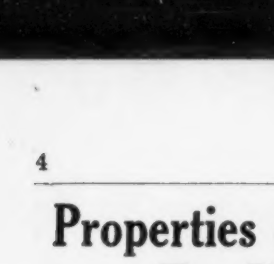
Suction Conditions:		Horse Power Required at Indicated Condenser Conditions:							
		Pressure, Lbs. Gage	28.9	36.9	45.8	56.3	67.8	80.8	95.4	111.5
Pressure Lbs. Gage	Temp. °F.	Temp. °F.	41	50	59	68	77	86	95	104
28.9	41	.....	0.089	0.176	0.275	0.375	0.474	0.584	0.695
21.9	32	0.087	0.182	0.277	0.377	0.484	0.600	0.708	0.830
15.9	23	0.182	0.280	0.383	0.490	0.603	0.721	0.846	0.972
10.7	14	0.282	0.395	0.499	0.614	0.736	0.861	0.998	1.13
6.2	5	0.399	0.510	0.623	0.748	0.881	1.01	1.15	1.30
2.4	—4	0.521	0.637	0.762	0.897	1.02	1.15	1.30	1.45
—0.9	—13	0.652	0.779	0.908	1.06	1.21	1.35	1.52	1.69
—3.6	—22	0.800	0.935	1.08	1.23	1.39	1.55	1.73	1.93
—5.9	—31	0.942	1.10	1.25	1.41	1.58	1.77	1.95	2.16
—7.74	—40	1.12	1.28	1.44	1.62	1.81	2.02	2.26	2.42

(The actual horse power required will probably be 50% to 60% greater than that shown in the above table, depending on the type of machine, drive, etc.)

TABLE II—VOLUME OF ARTIC (CU. FT. PER MIN.) TO BE HANDLED FOR ONE TON OF REFRIGERATION

Suction Conditions:		Volume at Indicated Condenser Conditions.							
		Pressure, Lbs. Gage	28.9	36.9	45.8	56.3	67.8	80.8	95.4	111.5
Pressure Lbs. Gage	Temp. °F.	Temp. °F.	41	50	59	68	77	86	95	104
28.9	41	.....	2.69	2.76	2.83	2.91	2.99	3.08	3.16
21.9	32	3.14	3.22	3.32	3.40	3.49	3.59	3.68	3.80
15.9	23	3.78	3.88	3.98	4.08	4.20	4.32	4.45	4.57
10.7	14	4.61	4.73	4.85	4.98	5.13	5.28	5.44	5.60
6.2	5	5.60	5.75	5.90	6.08	6.26	6.45	6.63	6.83
2.4	—4	6.90	7.09	7.28	7.49	7.71	7.94	8.19	8.45
—0.9	—13	8.57	8.80	9.06	9.35	9.63	9.90	10.21	10.53
—3.6	—22	10.71	11.02	11.35	11.70	12.05	12.44	12.83	13.28
—5.9	—31	13.42	13.92	14.32	14.78	15.25	15.78	16.28	16.85
—7.7	—40	17.29	17.80	18.38	18.94	19.56	20.23	20.90	21.65

(The actual amount of gas handled by the compressor will probably be between 25% and 40% more than the volume given in the above table, depending on the size of the installation, the efficiency of the compressor, etc.)



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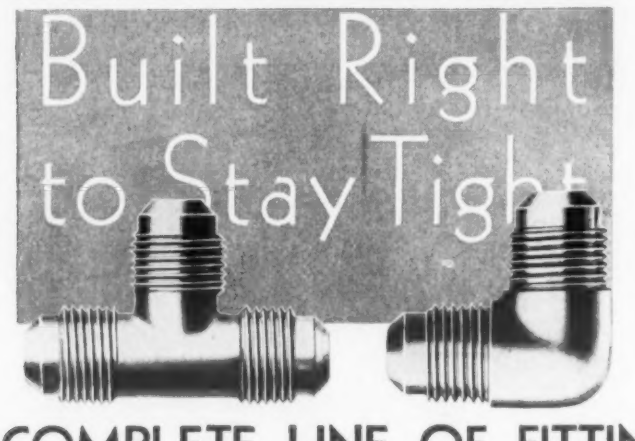

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REFRIGERATION DATA ON METHYL CHLORIDE

(Concluded from Page 4, Column 5)

for example, which may disrupt the system. Small Artic leaks are not considered dangerous, but over a long period bring about a serious loss of refrigerant, thus reducing the efficiency of the system. Such leaks can be easily and quickly detected by a halide lamp.

Special adaptations of Artic—Artic N and Methyl Chloride A—feature leak detection addition compounds and warning agents. These mixtures are especially convenient for the detection of leaks.

Methyl Chloride A

Methyl Chloride A is pure Artic plus 1 per cent of acrolein, a warning agent. Acrolein is an eye, nose and throat irritant whose presence is readily recognized in concentrations of only one part per million; higher concentrations i. e., 3 to 5 parts per million are intolerable.

These warning concentrations are well below the harmful concentration of the exceedingly toxic acrolein. The use of acrolein as a warning and tracer agent in systems using methyl chloride was brought to the attention of the refrigerating industry by Walter Kuenzli and R. M. Major of Evansville, Ind.

The addition of a small quantity of acrolein imparts warning properties to Artic and enables the quick detection of any escape of the refrigerant. In a series of experiments with methyl chloride A it was found that concentrations as low as 0.05-0.10 per cent (by volume) were indicated clearly and unmistakably within a matter of seconds.

Methyl chloride A must never be used in refrigeration units in the presence of sulphur dioxide.

Artic N

Artic N is prectically identical in properties and uses to Artic, except that a small quantity (0.3 per cent) of methyl nitrite has been added to serve as a leak detector. Several tests can be used to determine leaks of Artic N, all of which are very reliable and will show very small leaks of gas.

THERMAL AND DENSITY DATA OF ARTIC

Rating of Refrigerating Machines

The unit of capacity of refrigerating machines is the ton. One ton of refrigeration represents a refrigeration effect equivalent to one ton of ice melting at 32° F., in a period of 24 hours.

When one pound (avoirdupois) of ice melts, it absorbs from its surrounding medium 143.33 B.t.u. If one ton of ice is melted (at 32° F.) in 24 hours, 286,660 B.t.u. of heat are absorbed per 24 hours. This is at the rate of 199.028 B.t.u. per minute, or approximately 200 B.t.u. per minute.

Therefore, 200 B.t.u. per minute is taken as the commercial unit of capacity of a refrigerating machine; that is, a refrigerating machine which can absorb 200 B.t.u. per minute from the medium to be cooled has a capacity of one ton.

This rating does not mean that a machine having a refrigerating capacity of one ton per 24 hours will make one ton of ice during that time. Instead, the ice-making capacity will be much less, due among other causes, to the necessity of bringing the temperature of the water down to 32° F. before ice begins to form. The actual ice-making capacity is approximately half the ice-melting effect.

The amount of heat (B.t.u.) that a pound of Artic can remove from the evaporator depends upon two temperatures: The temperature of the evaporator and the temperature of the liquid Artic entering the evaporator.

Suppose that the evaporator temperature is 5° F. and the temperature of the liquid entering the evaporator is 86° F. According to Table III the total heat in the vapor at 5° F. is 195.3 B.t.u. per lb., and the total heat in the liquid at 86° F. is 46.6 B.t.u. per lb. (assuming that the heat in the liquid at –40° F. is zero).

Therefore, in evaporating from liquid at 86° F. to vapor at 5° F., each pound of Artic withdraws from its surroundings 195.3 B.t.u.—46.6 B.t.u.=148.7 B.t.u. This is the net refrigerating effect per pound of Artic.

Size of Compressor Required for One Ton of Refrigeration

One ton of refrigeration in 24 hours is equivalent to 200 B.t.u. per minute. If we consider the compressor as operating at the above temperature range (5° F. evaporator temperature and 86° F. condenser temperature), then the number of pounds of Artic that must be circulated per minute to produce one ton of refrigeration will be:

$$\frac{200 \text{ B.t.u.}}{148.7 \text{ B.t.u.}} = 1.34 \text{ lbs.}$$

The specific volume of Artic gas at the temperature of the evaporator (5° F.) is 4.53 cu. ft. per lb. Then the number of cu. ft. of gas to be removed from the evaporator each minute will be 4.53 cu. ft. x 1.34=6.07 cu. ft. The actual amount of gas to be handled by the compressor may be estimated to be about 30 per cent more than 6.07 cu. ft. or 7.89 cu. ft.

If the volumetric efficiency of the compressor is 80 per cent and its speed is 200 r.p.m., then its cylinder volume (for a single cylinder compressor) must be:

$$\frac{7.89 \times 1728 \text{ cu. in.}}{0.80 \times 200} = 84.06 \text{ cu. in.} \quad (0.049 \text{ cu. ft.})$$

How to Use the Heat Chart

The use of the Total Heat Chart simplifies refrigeration calculations and enables values to be determined for each set of temperature conditions without the usual lengthy and complicated calculations. The chart can be used for determining the following values:

1. Pressure in condenser (pressure of liquid entering evaporator).
2. Pressure of evaporator.
3. Heat content of liquid.
4. Heat content of gas leaving evapo rator.
5. Latent heat of gas at evaporator temperature and pressure.
6. Available refrigeration effect.
7. Specific volume of gas leaving evaporator.
8. Entropy of vapor.
9. Temperature of gas after compression.
10. Heat equivalent of compression power.
11. Heat to be removed in condenser.

The use of the chart is illustrated by means of the example below. Assume the temperature of the liquid entering the evaporator (condenser temperature unless intermediate storage is provided for the liquid) to be 86° F. and the temperature of the evaporator, 5° F. The numbered items correspond to the table above.

1. *Condenser Pressure*: Locate the point (A) on the Saturated Liquid curve at the condenser temperature (86°); read the pressure (96 lbs.) from the vertical scale at the left margin.

2. *Evaporation Pressure*: Locate the point (B) on the Saturated Liquid curve at the evaporator temperature (5°); read the pressure (21 lbs.) from the vertical scale at the left margin.

3. *Heat Content of Liquid*: From point (A), read the heat content (46.6 B.t.u. per lb.) from the horizontal scale at the top of the chart.

4. *Heat Content of Saturated Vapor*: Locate the point (C) on the Saturated Vapor curve at the evaporator temperature (5°); read the heat content (195.3 B.t.u. per lb.) from the horizontal scale at the top of the chart.

5. *Latent Heat of Gas*: Subtract the heat content of the liquid at the evaporator temperature (16.3 B.t.u. per lb. at 5°) from the heat content of the saturated vapor at the same temperature (195.3 B.t.u. per lb. at 5°). The difference (195.3—16.3=179.0 B.t.u. per lb.) is the latent heat at that temperature.

6. *Refrigerating Effect*:* Subtract the heat content of the liquid at the condenser temperature (46.6 B.t.u. per lb. at 86°) from the heat content of the saturated vapor at the evaporator temperature (195.3 B.t.u. per lb. at 5°). The difference is the available refrigerating effect. (195.3—46.6=148.7 B.t.u. per lb.)

*Lb. of Artic per ton of refrigeration $= \frac{200}{\text{Refrigerating Effect}}$

7. *Specific Volume of Vapor Leaving Evaporator*: From point C (see 4) estimate the specific volume (4.53 cu. ft. per lb.) by reference to the Constant Volume curves.

8. *Entropy of Vapor*: From point C (see 4) estimate the entropy of the vapor (0.4225) by reference to the Constant Entropy curves.

9. *Temperature of Gas After Compression*: Locate the point (D) at the condenser pressure having the same entropy as point C. Estimate the temperature (158°) by reference to the Constant Temperature curves.

10. *Heat Equivalent of Compression Power*: Substract the heat of the saturated vapor at the evaporator pressure (195.3 B.t.u. per lb.) from the heat content of the gas after compression (226.8 B.t.u. per lb. at point D). The difference (31.5 B.t.u. per lb.) is the heat equivalent of the power required for compression.

Note: The theoretical horsepower required for compression to produce one ton of refrigeration per day=

4.72 x (heat of compression) ÷ (available refrigerating effect).

For this example, hp. = 4.72 x 31.5÷ 148.7 = 1.00.

11. *Heat to be Removed in Condenser*: Subtract the heat content of the saturated liquid at the condenser pressure (46.6 B.t.u. per lb. at 96 lbs.) from the heat of the compressed vapor at the same pressure (226.8 B.t.u. per lb. at point D). The difference (180.2 B.t.u.) is the heat to be removed in the condenser.

Total Heat Chart

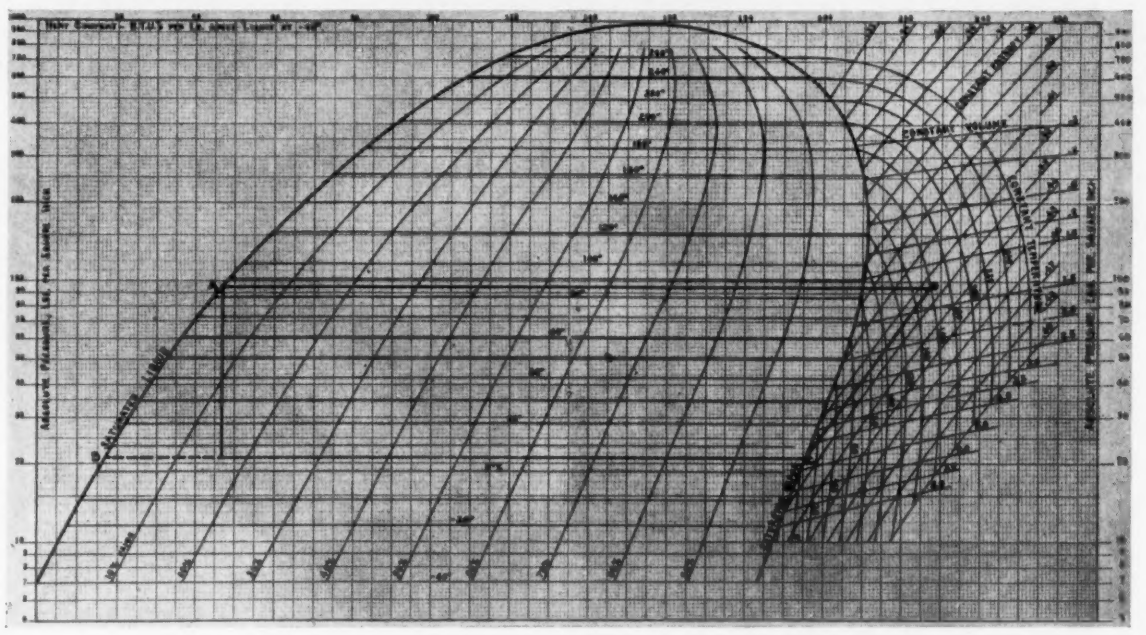
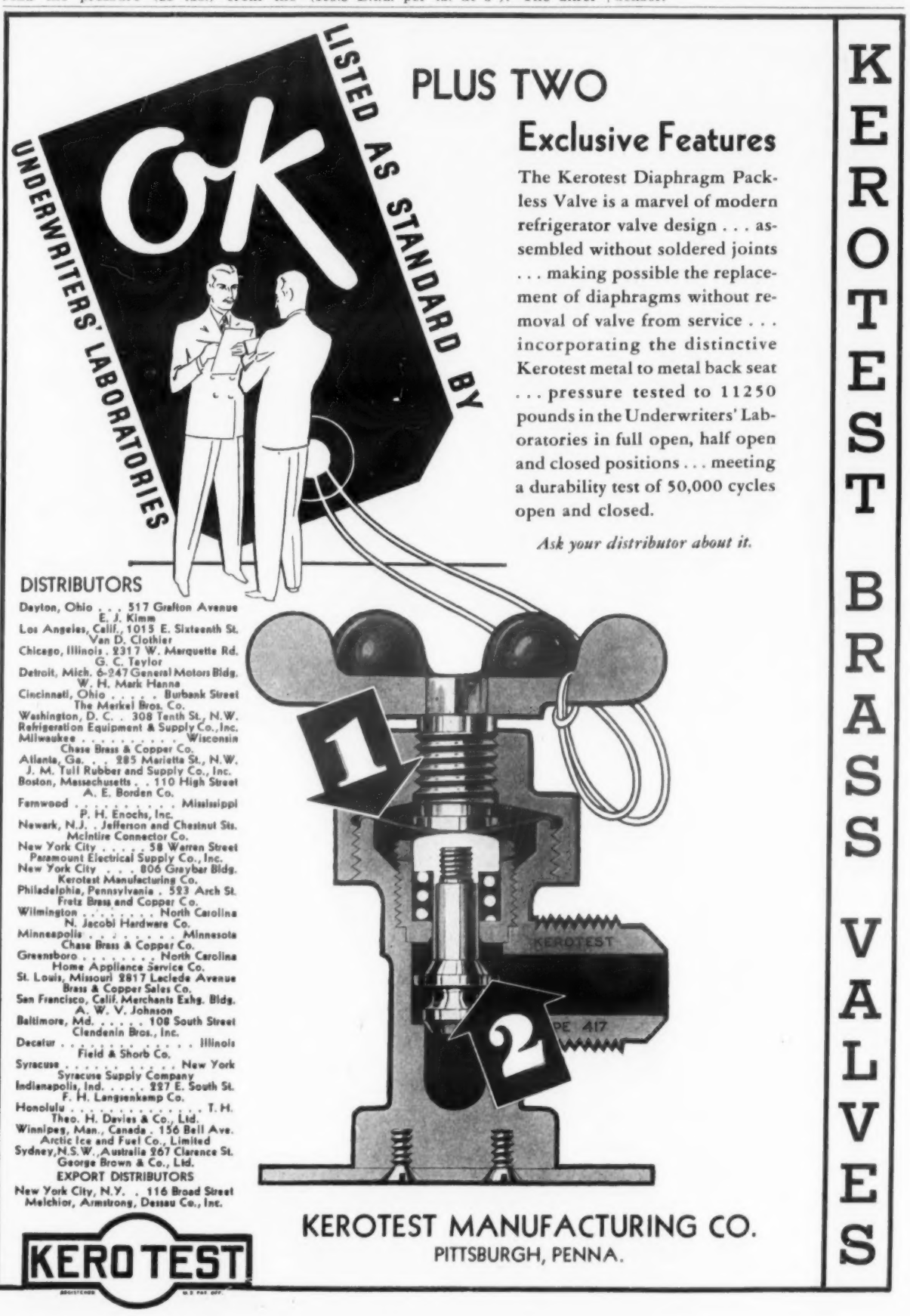


Table III—Methyl Chloride Saturated Liquid and Vapor-Temperature Table

Temp.	Pressure Lbs./sq. in.		Heat Content from —40°F B.t.u./lb.			Entropy from —40°F B.t.u./lb./°F		Density Lbs/cu. ft.	
°F t	Absolute P	Gage	Liquid q	Latent r	Vapor H=q+r	Liquid s	Vapor S	Liquid	Vapor 1/V
—40	7.0	.....	0	183.5	183.5	0.00	0.437	63.98	0.0795
—30	9.0	.....	4.0	182.0	186.0	0.008	0.433	63.40	0.1018
—20	11.5	.....	7.2	181.8	189.0	0.016	0.430	62.77	0.1294
—10	14.5	.....	11.0	180.5	191.5	0.024	0.427	62.17	0.1615
0	18.5	3.8	14.5	179.5	194.0	0.032	0.424	61.51	0.1998
5	20.89	6.19	16.3	179.0	195.3	0.036	0.4225	61.20	0.2208
10	23.3	8.6	18.0	178.5	196.5	0.040	0.421	60.89	0.2442
20	28.3	13.6	21.7	177.3	199.0	0.048	0.418	60.23	0.2970
30	35.0	20.3	25.2	176.0	201.2	0.056	0.415	59.62	0.3598
40	42.8	28.1	28.9	174.8	203.7	0.064	0.413	58.96	0.4311
50	51.0	36.3	32.5	172.8	205.3	0.071	0.410	58.15	0.5157
60	61.8	46.3	36.5	170.5	207	0.079	0.406	57.62	0.6102
70	72.5	57.8	40.5	167.5	208	0.086	0.402	56.91	0.7215
80	87.0	72.3	44.5	164.5	209	0.093	0.398	56.22	0.8498
85	95.53	80.83	46.6	163	209.6	0.097	0.395	55.77	0.9302
90	102.0	87.3	48.0	162.0	210	0.100	0.394	55.53	0.9918
100	117.0	102.3	52.0	158.5	210.5	0.107	0.390	54.84	1.1545
110	133	118.3	55.5	155.2	210.7	0.114	0.386	54.12	.....
120	154	139.3	59.0	152.0	211	0.121	0.382	.....	.....
130	176	161.3	62.5	148.8	211.3	0.128	0.378	.....	.....
140	200	185.3	67.0	144.0	211	0.134	0.374	.....	.....
150	228	213.3	71.0	139.6	210.6	0.141	0.370	.....	.....
160	258	243.3	75.5	134.5	210	0.147	0.365	.....	.....
170	291	276.3	80.0	129.0	209	0.153	0.360	.....	.....
180	325	310.3	83.0	125.0	208	0.159	0.356	.....	.....
190	370	355.3	87.0	120.0	207	0.166	0.351	.....	.....
200	410	395.3	91.0	115.0	206	0.173	0.346	.....	.....
210	453	438.3	96.0	109.0	205	0.179	0.340	.....	.....
220	500	485.3	100	103.5	203.5	0.186	0.334	.....	.....
230	553	538.3	105	95.0	200.0	0.192	0.328	.....	.....
240	610	595.3	109	87.5	196.5	0.198	0.322	.....	.....
250	655	640.3	114	78.5	192.5	0.204	0.317	.....	.....
260	725	710.3	119	69.0	188	0.210	0.312	.....	.....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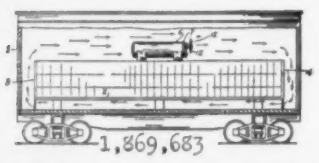
REVIEW OF LATEST PATENTS GRANTED

ISSUED AUGUST 2, 1932

1,869,617. REFRIGERATING APPARATUS. Donald H. Reeves, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Aug. 30, 1930. Serial No. 478,919. 6 Claims. (Cl. 62—119.5.)

1. Refrigerating apparatus of the continuous absorption type including a generator, an absorber containing absorption liquid, a condenser, and an evaporator connected to form a closed system, said evaporator being positioned below the generator and absorber, said evaporator and absorber containing an inert gas, and common means for circulating said inert gas and for returning absorption liquid collecting in the evaporator to the absorber.

1,869,683. REFRIGERANT GENERATOR AND CIRCULATOR. Ralph V. Grayson, Atlanta, Ga. Filed May 6, 1931. Serial No. 535,527. 5 Claims. (Cl. 62—91.5.)



1,869,683

2. Refrigerating system comprising walls forming a refrigerated chamber, means in said chamber for forming a circuitous circulation path, and a refrigerant generator and circulator positioned at the upper portion of said circulation path comprising means for generating a cold fluid under pressure, and means actuated by the pressure of said fluid for circulating said fluid.

1,869,701. REFRIGERATOR CAR. Alonzo C. Mather, Chicago, Ill. Filed Dec. 11, 1929. Serial No. 413,329. 4 Claims. (Cl. 62—117.)

1. The combination of a car having a truck provided with a movable axle, a platform connected with the truck, a compressor and a condenser carried by said platform, a cooling unit disposed within said car and operatively connected with said compressor and said condenser, means for operatively connecting the compressor with said axle, a motor, shiftable means for operatively connecting the motor with the compressor and disconnecting the compressor and the axle, and depending members associated with said axle and arranged for partly supporting said platform.

1,869,719. HUMIDIFIER. Edward Southworth, Portland, Me. Filed Feb. 2, 1931. Serial No. 512,911. 4 Claims. (Cl. 261—90.)

1. A humidifier, comprising in combination a revoluble disc having a plurality of concentrically disposed, overhanging steps spaced on the water-contacting side thereof, said steps adapted to be arranged to form a depression on the side of said disc nearer the outlet end of said humidifier, a plurality of apertures through said disc arranged in a circle concentric with and near its axis, and means to conduct water to and through said apertures and thence to the depression side of said disc.

1,869,769. BOX FOR REFRIGERATED SHIPMENTS AND THE LIKE. Alan M. Overton, Cincinnati, Ohio, assignor to The Richardson Co., Lockland, Ohio, a Corporation of Ohio. Filed Oct. 6, 1930. Serial No. 486,565. 4 Claims. (Cl. 229—45.)

2. In a container having a bottom and side walls, a separate cuff member formed of a piece of board bent upon itself and disposed with its folded portion adjacent the top edge of a side wall, said cuff member being stitched to said side wall by interspaced stitches passing through a lower edge portion thereof and a side wall, said stitches interspaced to permit the passage of an extension of a cover flap, a cover for said container, a cover flap on said cover and disposed in the space between said cuff and said side wall, and an extension on said cover flap extending beyond said cuff in the interspace between the stitches.

1,869,792. COOLING AND ICE TANK COILS. Ernest S. H. Baars, Milwaukee, Wis., assignor to The Vilter Mfg. Co., Milwaukee, Wis., a Corporation of Wisconsin. Filed Aug. 3, 1929. Serial No. 383,272. 5 Claims. (Cl. 62—158.)

1. In cooling and ice tank coils, the combination of a tank, said tank being filled for a desired height with a refrigerating medium, upper and lower headers within the tank communicating with a source of liquid refrigerant supply, sets of cooling tubes for the circulation therethrough of the cooling medium, each set comprising at least three tubes, the major portion of each tube being vertically disposed, one of said tubes communicating at its upper end with the interior of the upper header through the top of said header, and the lower end of said tube communicating with the lower header through the top thereof, and the upper ends of the other tubes communicating with the interior of the upper header through the bottom thereof and extending upwardly into the interior of said header for a desired distance, and its lower end communicating with the lower header, and means for causing a circulation of the refrigerating medium within the tank back and forth around the cooling tubes.

1,869,810. PROCESS OF MAKING CHILLED FOOD PRODUCTS. Linzy Hicks, Lexington, Ky. Filed Jan. 28, 1927. Serial No. 164,312. 1 Claim. (Cl. 107—54.)

The art of producing articles of the class described comprising forming a ring of frozen edible material of sufficient stability to be self-sustaining when encircling a support, inserting a tool in the opening of the ring proportioned to snugly fit said opening, coating the balance of the ring with an edible coating, and removing the tool.

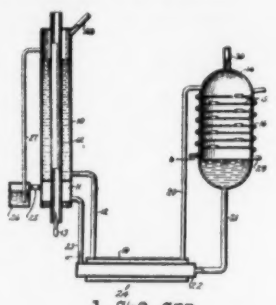
1,869,812. REFRIGERATING APPARATUS. William C. Holbrook, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Oct. 31, 1928. Serial No. 316,285. 4 Claims. (Cl. 25—4.)

1. A door for a refrigerator comprising a substantially rectangular frame having an edge provided with a flanged offset, insulation within said frame, a metal pan on one side of said frame with its edge partly over the edge of the frame, a second metal pan on the other side of said frame with its edge adjacent the edge of said frame near said flanged offset, there being a gap between the edges of said pans, a gasket adapted to bear against a portion of the refrigerator, and a finishing strip in said gap between said first named pan and said flanged offset adapted to lock said gasket in place between the edge of said first named pan and said finishing strip.

1,869,835. REFRIGERATION UNIT. Robert L. Alexander and James R. McCallum, Clinton, Iowa, assignors to The Climax Engineering Co., Clinton, Iowa, a Corporation of Delaware. Filed Feb. 26, 1930. Serial No. 431,524. 12 Claims. (Cl. 62—115.)

1. A refrigerating apparatus comprising in combination, a sealed compression unit including a compressor and a driving motor therefor enclosed within a casing, means for supporting said casing with the lower end thereof in spaced relation to and above a surface, a condenser connected to receive compressed refrigerant from said compressor, means for receiving refrigerant from said condenser, a control device for said motor and means for mechanically connecting said condenser, said receiving means and said control device to said unit below the lower end of said casing.

1,869,853. ABSORPTION TYPE REFRIGERATING APPARATUS. Donald B. Knight, Brooklyn, N. Y., assignor to Electrolux Servel Corp., New York, N. Y., a Corporation of Delaware. Filed June 10, 1931. Serial No. 543,277. 9 Claims. (Cl. 62—119.5.)



1,869,853

7. A vapor liquid pump comprising a fluid tight chamber, heating means for said chamber, a fluid tight pump vessel, a conduit from the upper part of said chamber to said pump vessel, a liquid inlet in the lower part of said chamber, and a discharge pipe extending upwardly from the lower part of said pump vessel.

1,869,917. REFRIGERATION APPARATUS. Warren H. F. Schmieding, Dayton, Ohio, assignor, by mesne assignments, to Frigidaire Corp., a Corporation of Delaware. Filed Jan. 25, 1926. Serial No. 83,427. 11 Claims. (Cl. 62—8.)

1. A refrigerating system comprising, in combination, an evaporator for cooling the medium to be cooled, means for withdrawing refrigerant from the evaporator and for condensing said refrigerant and for forcing the same into the evaporator, and valve means at the inlet of the evaporator for controlling the flow of refrigerant to said evaporator, said last means being directly responsive to the pressure within the evaporator for regulating the flow of refrigerant to the evaporator and responsive to the condition of the medium cooled by said evaporator for positively preventing the flow of refrigerant to the evaporator.

1,869,933. SEAL FOR ROTATING SHAFTS. George J. Cooke, Chicago, Ill., assignor to Cooke Electric Refrigeration Co., Chicago, Ill., a Corporation. Filed Feb. 10, 1926. Serial No. 87,270. 8 Claims. (Cl. 286—7.)

7. A seal for a rotating shaft which extends through a wall comprising an annular cup-shaped member adapted to encircle the shaft and free to rotate and move longitudinally thereon, said cup having a bottom adapted to seat upon the wall around the shaft and form a ground joint therewith, an annular rubber-like gasket adapted to encircle the shaft within the cup and a spring adapted to encircle the shaft and press the gasket into the cup, and squeeze same into firm sealing contact with the shaft, neither cup, spring nor gasket having any positive driving connection with the shaft but being rotated thereby solely through the frictional engagement of the rubber-like gasket on the shaft.

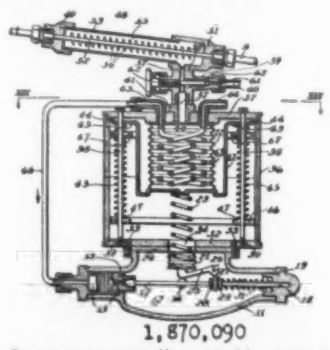
1,870,074. LOW COLD TEST LUBRICATING OIL. Frederick W. Sullivan, Jr., Whiting, Ind., and William J. McGill, Wood River, Ill., assignors to Standard Oil Co., Whiting, Ind., a Corporation of Indiana. Filed Dec. 29, 1928. Serial No. 329,305. 20 Claims. (Cl. 87—9.)

1. The method of lowering the pour test of a viscous hydrocarbon oil which comprises supplying therein a small proportion of an amide derived from fatty acids and derivatives of aniline having alkyl groups substituted in the ring.

1,870,088. REFRIGERATING APPARATUS. Louis I. Beckwith, Brookline, Mass. Filed June 12, 1931. Serial No. 544,023. 7 Claims. (Cl. 248—2.)

1. An installation of the class described comprising expansible uprights spaced in rows, each upright extending substantially between the floor and ceiling and comprising upper and lower relatively rotatable sections, means associated with each section and relatively rotatable in relation thereto for abutment against the floor and ceiling respectively, a web disposed transversely between the adjoining ends of the sections of each upright, interfitting connections between adjoining ends of said sections and the webs, said connections providing for relative rotary movement of the sections of each upright while retaining them substantially in alignment, structural means extending longitudinally of each row and connecting the webs associated with the uprights thereof, beams extending transversely between the rows and supported by the structural means, and means for supporting a cooling coil from the beams.

1,870,090. VALVE APPARATUS. William J. Bolton, Oakmont, Pa. Filed May 7, 1929. Serial No. 361,128. 14 Claims. (Cl. 236—92.)



1,870,090

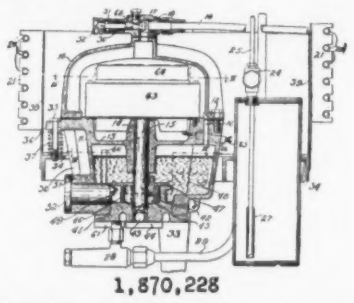
1. In an automatically operable control device for refrigerating systems, a valve for controlling the flow of refrigerant in the system, means responsive to the pressure of the expanded gases in the cooling coil of the system tending to close said valve, thermostatic means adapted to be responsive to the temperature of the refrigerant discharged from the cooling coils tending to open said valve in opposition to the pressure exerted on the valve closing means by the expanded gases in the cooling coils, and adjustable means for predetermining the maximum back pressure necessary to close said valve.

1,870,196. AIR FILTER. Chester P. Hegan, Louisville, Ky., assignor to American Air Filter Co., Inc., Louisville, Ky., a Corporation of Delaware. Filed June 18, 1928. Serial No. 286,291. 11 Claims. (Cl. 183—21.)

1. In a filter the combination of a filter unit, means for accumulating a supply of liquid at a level above said unit, means for automatically dumping said accumulated liquid toward said filter unit, means for supplying liquid to said accumulating means, and means actuated by the weight of a portion of the liquid dumped by the accumulating means for arresting operation of the liquid supplying means.

ISSUED AUGUST 9, 1932

1,870,228. DIRECT CONNECTED MOTOR AND COMPRESSOR. Howard E. Blood and Royal G. Nelson, Detroit, Mich., assignors to Norge Corp., a Corporation of Michigan. Filed Nov. 28, 1927. Serial No. 236,091. 15 Claims. (Cl. 62—115.)



1,870,228

1. A direct connected motor and compressor unit for refrigerating apparatus comprising a casing, a motor and compressor unit mounted in said casing with a removable compressor body forming a bottom closure for said casing, a heat shield surrounding the casing, means yieldingly supporting said casing, condenser coils mounted on said heat shield, and a liquid receiver connected to said coils.

1,870,265. REFRIGERATING PROCESS AND THE APPARATUS APPLICABLE THERETO. Arthur Seligmann, Dusseldorf, Germany. Filed Aug. 18, 1928, Serial No. 300,505, and in Germany Aug. 22, 1927. 11 Claims. (Cl. 62—169.)

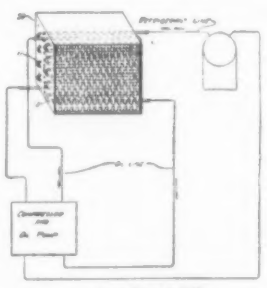
1. The process of refrigerating, which consists in raising by jet compression a refrigerating medium dissolved in a solvent from the lower absorbing pressure to the higher generating pressure, evaporating the power medium different from the refrigerating medium prior to its work in the jet compression, then condensing the same by mixing it with the solution, separating the power medium and the solution by the agency of their different specific gravities, and permitting the power medium to flow back to be again evaporated.

1,870,370. AUTOMATICALLY SUPPLIED MOLD WITH CONTROLLED RELEASE FOR THE PRODUCTION OF ICE BLOCKS. Pierre Jean Marchaut, Enghien, France. Filed Jan. 8, 1931, Serial No. 507,406, and in France Nov. 29, 1930. 3 Claims. (Cl. 62—108.5.)

1,870,431. REFRIGERATING APPARATUS AND CONTROL THEREFOR. Henry E. Willsie, New York, N. Y., assignor to The Union Trust Co., Cleveland, Ohio, a Corporation of Ohio. Filed Sept. 6, 1927. Serial No. 217,678. 8 Claims. (Cl. 62—5.)

1. The combination in a refrigeration apparatus of a still-absorber, evaporator and condenser connected in an operative cycle, a float chamber, a pipe connected to the bottom of the evaporator and to the float chamber, a pipe connecting the float chamber to the still-absorber, a check valve in the pipe connecting the evaporator to the float chamber, and a float within the float chamber arranged to unseat the check valve during the heating period.

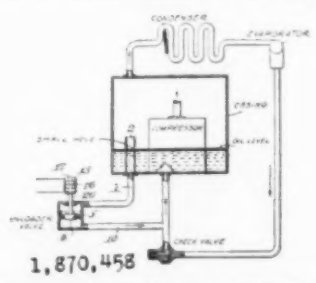
1,870,457. REFRIGERATING APPARATUS. Mahlon W. Kenney, Elmhurst, Ill., assignor, by mesne assignments, to Grigsby-Grunow Co., a Corporation of Illinois. Filed Dec. 19, 1930. Serial No. 503,461. 3 Claims. (Cl. 257—36.)



1,870,457

1. In a refrigerating system of the type wherein refrigerant and lubricant freely mingle, a unitary condenser structure provided with separate paths therethrough for refrigerant and lubricant respectively, and supporting means for controlling the heat transfer from one of said paths through to the other whereby said refrigerant and lubricant may be cooled to different temperatures in the same structure.

1,870,458. REFRIGERATION APPARATUS. Mahlon W. Kenney, Elmhurst, Ill., assignor, by mesne assignments, to Grigsby-Grunow Co., a Corporation of Illinois. Filed Jan. 12, 1931. Serial No. 508,023. 12 Claims. (Cl. 62—115.)



1,870,458

1. A system of the character described comprising a compressor, a gas conduit having a check valve connected to the intake thereof, a shunt path from the exhaust to the intake of the compressor including a valve for unloading said compressor during the starting thereof, and means associated with said shunt path for the introduction of a sealing liquid on said valve.

1,870,460. AIR COOLING CABINET AND METHOD FOR PREVENTING CONDENSATION OF MOISTURE THEREON. Albert L. Lambert, Narberth, Pa., assignor to Heintz Mfg. Co., a Corporation of Pennsylvania. Filed Oct. 15, 1931. Serial No. 568,944. 13 Claims. (Cl. 62—129.)

1. The method of preventing the condensation of moisture upon the outer surfaces of the outer walls of an air cooling cabinet which consists in passing the air to be cooled over the inner surfaces of the walls and maintaining such temperature for the stratum of air next to said walls that the temperature of the outer surfaces of the walls is above the condensation point of the outside air.

1,870,531. REFRIGERATING PROCESS AND APPARATUS FOR COOLING FAT EMULSIONS SUCH AS MARGARINE AND THE LIKE. Wilhelm Gotthilf Schroeder, Lubeck, Germany. Filed Aug. 20, 1929, Serial No. 387,166, and in Germany Feb. 4, 1926. 3 Claims. (Cl. 62—114.)

1. An apparatus for cooling fat emulsions comprising a jacket member, a drum provided with hub elements revolubly mounted in said member, a cylindrical member rigidly secured within said drum so as to form a space between them adapted to be constantly and completely filled with brine, a series of concentrically coiled tube lengths for a cooling agent mounted one within the other in said space and secured to said drum, said tube lengths being coiled to produce a flow of said cooling agent oppositely to the direction of rotation of said drum, supply and drain pipes in the respective hub elements terminating each with a hollow central head on the cylindrical member and tubular spokes on said head for each of said coiled tube lengths.

1,870,593. REFRIGERATOR SHELF APPLIANCE. Louis S. Shauer and Rose Shauer, Los Angeles, Calif. Filed March 11, 1931. Serial No. 521,646. 12 Claims. (Cl. 211—153.)

2. A shelf appliance having a circular tray formed of sheet material, and having a central pivot socket formed with a central portion extending downwardly and a portion immediately adjacent being above the plane of the circular tray, a disk-like receptacle formed of sheet material having a downwardly extending central portion forming a downward projection to fit in the said socket, the said receptacle being rotatable with the socket and the projection acting as a pivot.

1,870,616. OZONIZER. Albert E. Evans, Cleveland, Ohio, assignor, by mesne assignments, to The Corozone Co., Wilmington, Del., a Corporation of Delaware. Filed Sept. 25, 1928. Serial No. 308,164. 2 Claims. (Cl. 175—356.)

1. An ozone machine comprising: a casing having a front wall, side walls provided with inwardly extending flanges adjacent the rear edges thereof, and also with longitudinally extending channels, and a separate rear wall secured to said flanges, said side walls having laterally extending flange portions at each end thereof; a transformer having a laminated core disposed within said casing, and having the opposite sides of said core tightly engaging said channels to maintain the laminations thereof against displacement; and ends of openwork structure secured to said laterally extending flanges at opposite ends of said casing to permit of the circulation of air through said casing and around said transformer.

(Continued on Page 7, Column 1)

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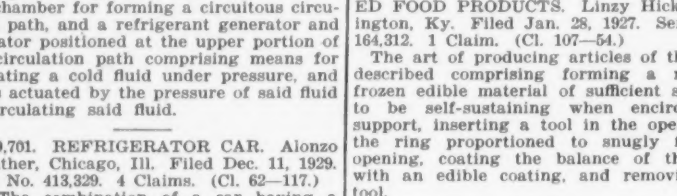

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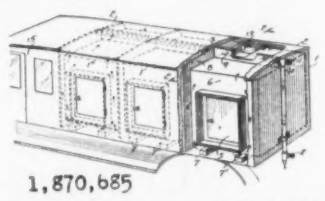
IN FIELD OF ELECTRIC REFRIGERATION

(Continued from Page 6, Column 5)

1,870,684. HEAT EXCHANGE METHOD AND APPARATUS. David H. Killeffer, Yonkers, N. Y., assignor to Dryice Equipment Corp., New York, N. Y., a Corporation of Delaware. Filed Nov. 30, 1929. Serial No. 410,749. 6 Claims. (Cl. 62—91.5.)

2. A method of refrigerating a space or products by transferring heat therefrom at varying rates, which includes sublimating solid carbon dioxide by absorbing heat through spaced apart thin metal elements, one of which is in contact with said solid and the other of which is in contact with a region or material from which the heat is absorbed, interposing a gas between said metal elements for convection transfer of heat at a relatively slow rate suitable for certain conditions, and displacing said gas by liquid of lower freezing point than said solid when a lower refrigerating temperature is desired.

1,870,685. REFRIGERATOR TRUCK BODY. Edwin J.Lockwood, Peekskill Village, N. Y., assignor to Dryice Equipment Corp., New York, N. Y., a Corporation of Delaware. Filed April 12, 1928. Serial No. 269,354. 9 Claims. (Cl. 62—91.5.)



1,870,685

1. In a refrigerator truck body, containing a plurality of sections, each section having commodity access means and each containing solidified gas refrigerant, the vaporization from which is free to circulate coextensive with the hollow shell structure of said body and of each of said sections.

1,870,691. METHOD OF AND APPARATUS FOR MAKING AND SHAPING SOLID CARBON DIOXIDE. Robert R. Rust, Garden City, and Charles L. Jones, Pelham, N. Y., assignors to Dryice Corporation of America, New York, N. Y., a Corporation of Delaware. Filed Dec. 17, 1929. Serial No. 414,675. 20 Claims. (Cl. 62—121.)

1. A method which includes making and accumulating solid carbon dioxide by evaporating liquid carbon dioxide in a pressure chamber; affording an outlet for extrusion of the accumulated solid while opposing substantial resistance to such extrusion; and utilizing the internal pressure of gas in the chamber to compress the solid, and force extrusion thereof through said outlet against said resistance.

1,870,874. SYSTEM FOR CONTROLLING REFRIGERATION. Richard Sause, New York, N. Y. Filed March 6, 1930. Serial No. 433,541. 14 Claims. (Cl. 194—6.)

1. In refrigeration of the class wherein an electric circuit supplies current for operating the apparatus which effects the refrigeration; the combination with contacts forming a break in the circuit, of a coin retaining and releasing element having a cooperative relation with the contacts, means for positioning the coin so as to be retained by such element for closing the circuit through the contacts, time measuring means, and means operable by the time measuring means for acting on the retaining element to maintain the coin in retained position during a definite period of time and for releasing the coin so as to break the circuit at the completion of such period, the coin maintaining and releasing means including a timing member operable by the time measuring means, and a spring pressed device operable in one direction by the member and in the opposite direction by the spring, whereby to maintain the coin in position and to release it when the time period is completed.

1,870,904. ATTACHMENT OF HEADS TO BELLOWS. Jean V. Giesler, Knoxville, Tenn., assignor to The Fulton Syphon Co., Knoxville, Tenn., a Corporation of Delaware. Filed Aug. 2, 1930. Serial No. 472,565. 16 Claims. (Cl. 113—116.)

1. A highly-flexible, deeply-corrugated metal bellows formed of relatively thin metal and provide with a relatively thick head within the end of the bellows tube and a relatively thick reenforcing ring surrounding the end of the bellows tube and in substantially radial alignment with said head, the end of said bellows tube being fused to said head and said ring.

9. In a method of making highly-flexible bellows of relatively thin metal and which includes the forming of relatively deep corrugations by cold working in the relatively thin metal of the bellows tube, embracing the end of the bellows tube between a relatively thick head and a relatively thick reenforcing ring and fusing the tube-end, head and ring into an integral joint.

1,870,911. REFRIGERATOR CAR. George A. Hull, Chicago, Ill., assignor to Equipment Specialties Co., Chicago, Ill., a Corporation of Illinois. Filed April 5, 1929. Serial No. 352,626. 10 Claims. (Cl. 62—19.)

1. In a refrigerator car, the combination of a car structure having floor, walls and roof with a bulkhead, forming an ice chamber in said car, said bulkhead having ventilating openings above and below the same, an ice support in said ice chamber, a brine tank rectangular in plan and of substantially the same floor area as said ice support located below said ice support to receive brine drippings from said ice chamber, said car having an air passage between said ice support and brine tank for cooling air by passage through brine drippings and said car having air passages about and under said brine tank for cooling air by contact with said tank and a drip pan below said brine tank and below the car floor for receiving drainage from both said tank and floor.

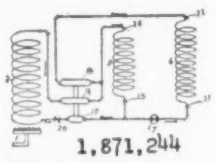
1,871,126. HINGE. Louis W. Morley, Trenton, N. J., assignor to C. V. Hill & Co., Inc., Trenton, N. J., a Corporation of New Jersey. Filed March 16, 1932. Serial No. 599,257. 3 Claims. (Cl. 16—191.)

1. A hinge comprising a pair of leaves, one leaf having a pair of knuckle flanges extending forwardly therefrom in spaced relation and a stop pin carried by said flanges, and the other leaf having at one end thereof a tongue bent rearwardly substantially at right angles thereto and provided with lateral knuckles extending between and pivoted to the said knuckle flanges and having a stop flange for engagement with the said stop pin at the limit of swinging movement of the second-named leaf.

1,871,138. INSULATED LID OR COVER. Hugh H. Ward, Jr., Chester, Pa. Filed July 21, 1931. Serial No. 552,254. 4 Claims. (Cl. 220—24.)

1. A lid or cover comprising a top plate having an integral peripheral loop, a reinforcing steel plate the peripheral part of which extends into said loop to attach said plates together, said loop having a downward extension provided at its bottom with lugs a peripheral packing ring or gasket having at its top an inwardly extending lip fitting against said downward extension and engaged by said lugs, when they are turned outward and engaged with said lip.

1,871,244. AIR CONDITIONING SYSTEM. Arthur B. Steuart, Baltimore, Md. Filed Aug. 19, 1931. Serial No. 558,161. 4 Claims. (Cl. 62—115.)



1,871,244

1. The combination in a heating and cooling system for dwellings or places of human assembly of a power generating means of the fluid expansion type, a boiler, a condenser and a boiler feed pump therefor together with refrigerating means consisting of a compressor driven by said power generating means, and delivering to the same condenser as the power generating means an evaporator and a pressure reducing valve of suitable type, said condensing element and evaporating element having mutually interconnecting means including change-over valves so that their respective functions in the system may be mutually interchanged or reversed.

1,871,277. HUMIDIFIER. Louis F. Perkett, Traverse City, Mich. Filed July 2, 1931. Serial No. 548,370. 8 Claims. (Cl. 219—45.)

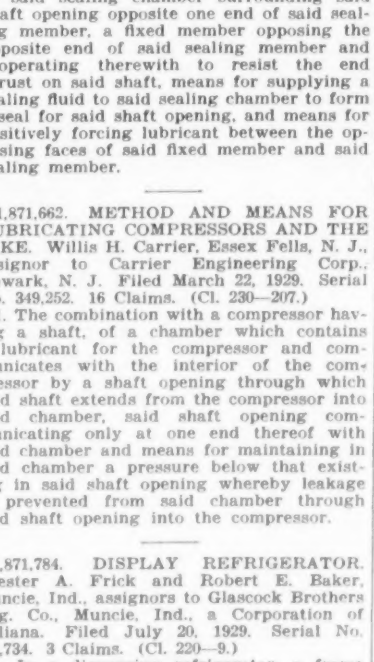
1. A humidifier of the character described embodying a casing, a horizontal support removably arranged in the casing and extending partially thereacross, a vertical partition within the casing beneath said support for dividing said casing into two chambers having communication adjacent the bottom of the partition, a lamp in one of the chambers and mounted upon said support, a thermostat for controlling the lamp and arranged in the outer chamber and mounted upon said support, a closure for the casing, and means whereby electrical connection may be made with the lamp, through a wall of the casing.

ISSUED AUGUST 16, 1932

1,871,526. SEPARATOR. John Hudson, Brooklyn, N. Y. Filed May 24, 1928. Serial No. 280,281. 5 Claims. (Cl. 62—115.)

1. The combination with a refrigerating apparatus; of a device for charging said apparatus from a container of refrigerant adapted to be connected with the apparatus and also with said container, said device serving for the purpose of separating or extracting any water content of the refrigerant during charging, said device including means having freezing surfaces, and means for conducting the refrigerant in the presence of said surfaces for the purpose of freezing the water which will be deposited thereon in the form of snow or ice.

1,871,645. REFRIGERATING MACHINE. William G. Abbott, Jr., Milford, N. H. Filed June 30, 1928. Serial No. 289,432. 11 Claims. (Cl. 62—115.)



1,871,645

1. In a refrigerating system, a rotary compressor, including a rotary casing containing a body of liquid, said casing being arranged upon rotation to maintain said liquid in the form of an annulus, a rotor within the casing rotatable about an axis eccentric in relation to the inner surface of the annulus, said rotor having a helical passage partially submerged in the liquid of said annulus, said passage being arranged to have a large inlet end to receive refrigerant and tapering to a smaller outlet end to give up compressed refrigerant, a duct for cooling compressed refrigerant connected to the outlet of the helical passage, said duct extending spirally about the rotary casing and being arranged to vent refrigerant into a cooler, the liquid in said annulus being circulated past the inner surface of the wall of the casing by the arrangement of the helical passage, and air being swept past the outer surface of the wall by rotation of the spiral duct.

1,871,661. SEALING AND THRUST DEVICE. Willis H. Carrier, Essex Fells, N. J., assignor to Carrier Engineering Corp., Newark, N. J. Filed March 22, 1929. Serial No. 349,251. 10 Claims. (Cl. 286—9.)

10. The combination with a rotary shaft and a casing having a shaft opening through which said shaft extends, of means for sealing said shaft opening comprising a sealing member surrounding said shaft and arranged to rotate and move axially with the shaft, a sealing chamber in which said sealing member rotates and has a limited axial movement, a seat at one end of said sealing chamber surrounding said shaft opening opposite one end of said sealing member, a fixed member opposing the opposite end of said sealing member and cooperating therewith to resist the end thrust on said shaft, means for supplying a sealing fluid to said sealing chamber to form a seal for said shaft opening, and means for positively forcing lubricant between the opposing faces of said fixed member and said sealing member.

1,871,662. METHOD AND MEANS FOR LUBRICATING COMPRESSORS AND THE LIKE. Willis H. Carrier, Essex Fells, N. J., assignor to Carrier Engineering Corp., Newark, N. J. Filed March 22, 1929. Serial No. 349,252. 16 Claims. (Cl. 230—207.)

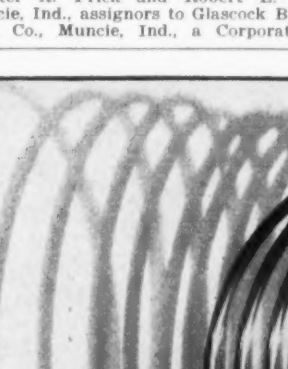
1. The combination with a compressor having a shaft, of a chamber which contains a lubricant for the compressor and communicates with the interior of the compressor by a shaft opening through which said shaft extends from the compressor into said chamber, said shaft opening communicating only at one end thereof with said chamber and means for maintaining in said chamber a pressure below that existing in said shaft opening whereby leakage is prevented from said chamber through said shaft opening into the compressor.

1,871,784. DISPLAY REFRIGERATOR. Chester A. Frick and Robert E. Baker, Muncie, Ind., assignors to Glascock Brothers Mfg. Co., Muncie, Ind., a Corporation of Indiana. Filed July 20, 1929. Serial No. 379,734. 3 Claims. (Cl. 220—9.)

1. In a dispensing refrigerator, a frame comprising a pair of end members each comprising a pair of angles forming end trims and legs, a panel permanently secured between said angles and having its bottom edges turned inwardly to form a flange, side bracing members formed of angles extending between said end members and detachably secured thereto, one side of said angles extending inwardly, an insulating panel resting on said bracing angles and inturned flanges, a refrigerating tub supported on said flanges and bracing angles and fitting within said frame, side panels fitting between said legs, insulating panels interposed between said side panels and the sides of said tub, a rectangular frame formed of channel members receiving the upper edges of said tub and frame and a hinged cover mounted on said rectangular frame for closing said tub.

1,871,829. REFRIGERATORY CONTAINER. Joseph Weinstein, Brooklyn, N. Y., assignor to Dryice Equipment Corp., New York, N. Y., a Corporation of Delaware. Original application filed June 22, 1927, Serial No. 200,515. Divided and this application filed March 21, 1930. Serial No. 437,789. 15 Claims. (Cl. 62—91.5.)

1. A bottle provided with an inwardly projecting water-tight, gas-tight chamber having an independent plugable opening to the exterior through which it may be charged with refrigerant and through which gas may escape, in combination with solid carbon dioxide in said chamber, and means



1,871,829

for preventing contact of said solid with the walls of said container.

1,871,879. REFRIGERATION APPARATUS. Lee S. Chadwick, Shaker Heights, Ohio, assignor to Perfection Stove Co., Cleveland, Ohio, a Corporation of Ohio. Filed May 9, 1929. Serial No. 361,579. 17 Claims. (Cl. 62—118.)

1. In refrigeration apparatus of the intermittent absorption class, the combination of a cabinet enclosing the cold space, a generator-absorber, heating means therefor, a receiver insulated from the cold space, conduits through which the generator-absorber and receiver communicate, a main condenser for producing refrigerant condensate for delivery to the receiver, an evaporator communicating with the receiver and arranged in heat exchanging relation to the cold space, and an auxiliary condenser insulated from the cold space for acting upon any refrigerant that passes from the receiver to the evaporator, the auxiliary condenser containing a liquid whose freezing point is above the temperature of the evaporating refrigerant and below a temperature value above which it is desired the temperature of the cold space shall not go.

1,872,031. BOTTLE REFRIGERATOR. Chester A. Frick and Robert E. Baker, Muncie, Ind., assignors to Glascock Brothers Mfg. Co., Muncie, Ind., a Corporation of Indiana. Filed Nov. 7, 1928. Serial No. 318,899. 9 Claims. (Cl. 312—36.)

1. In a bottle dispensing refrigerator the combination with a container having a continuous channel therein arranged to receive the bottles in side by side relation, said container having a single opening therein through which the bottles are axially inserted and removed, of a propeller in said channel and a closure member for said opening and means for coincidentally moving said propeller and closure in two directions, said means permitting the closure to be moved independently of the propeller during a portion of its movement.

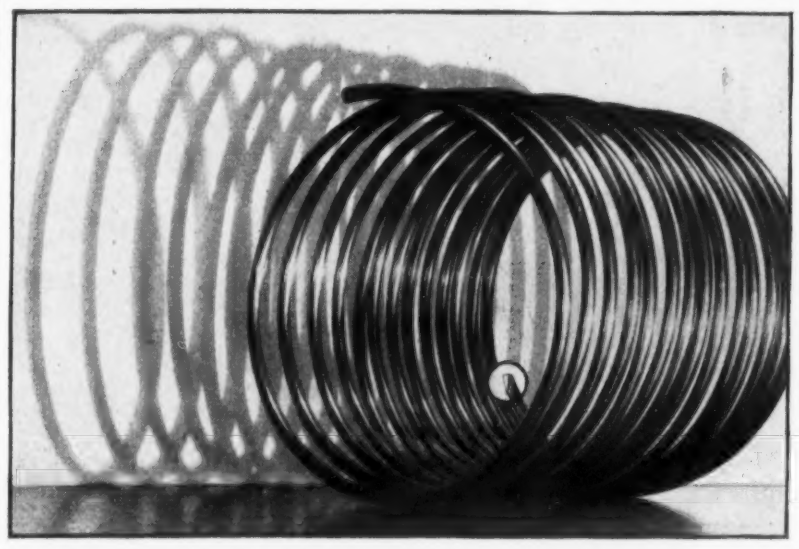
1,872,032. BOTTLE DISPENSING REFRIGERATOR. Chester A. Frick and Robert E. Baker, Muncie, Ind., assignors to Glascock Brothers Mfg. Co., Muncie, Ind., a Corporation of Indiana. Filed Jan. 15, 1931. Serial No. 508,904. 8 Claims. (Cl. 312—36.)

7. In a bottle dispensing refrigerator, the combination with a cylindrical container having an annular channel therein adapted to support the bottles in a side by side upright position, of a rotatable cover for said container having a single receiving and dispensing opening therein, a propeller in said channel, a lost motion connection between said cover member and said propeller and means for closing said opening except when the same is in a dispensing or receiving position.

1,872,195. AIR CONDITIONING APPARATUS. Dell Thompson, Detroit, Mich., assignor to Drying Systems, Inc., Chicago, Ill., a Corporation of Illinois. Filed April 8, 1931. Serial No. 528,490. 6 Claims. (Cl. 257—2.)

1. An air conditioning apparatus comprising a cabinet, means for maintaining a water level therein, an air inlet and an air outlet in said cabinet above said water level, means for forcing air through the cabinet, a humidifying device located in the path of travel of the air through the cabinet and having at its lower end a trough extending above and below the water level in the cabinet, a thermostat located in said trough, means for pumping water from the bottom of the cabinet to the top of said humidifier, said means for pumping water being under the control of said thermostat.

1,872,223. MERCURY SWITCH. Paul S. Bear, Elkhart, Ind., assignor, by mesne assignments, to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a Corporation of Delaware. Filed June 18, 1930. Serial No. 461,922. 4 Claims. (Cl. 200—152.)



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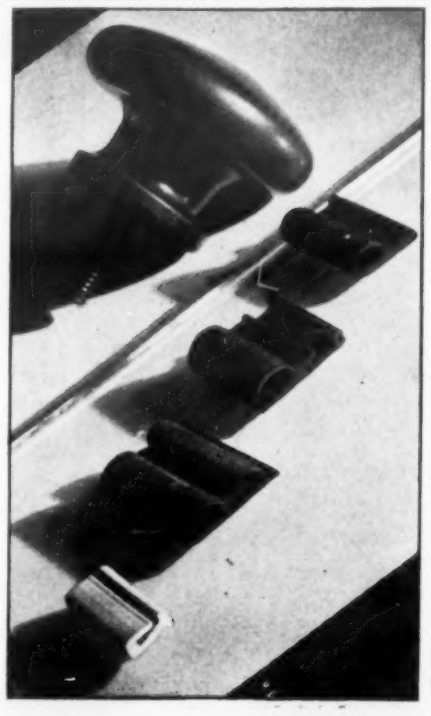

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